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ABSTRACT

A longitudinal study of language development in the preschool years was conducted in order to describe developmental sequence and to estimate, at three-month intervals, the range of language attainment in a normal population of children between 15 and 60 months of age. Additionally, possible determinants of variation in rate and style of language development at home were sought, and antecedents of differential progress in the early stages of learning to read were investigated. The sample included 128 children, half 15 months old and half 39 months old, selected from a random sample to give equal representation to both sexes, to four classes of family background, and to birth at each of the four seasons. Results pointed to the importance of preschool experience for children's progress in the early years of schooling and in particular suggested that it was the quality of parent-child interaction that differentially equipped the children to benefit from school. Subsequently, observations of naturally occurring linguistic interaction in the early years of schooling were conducted to address questions about social class similarities and differences between mothers' and teachers' language usage. This third phase of the longitudinal study compared children's language experiences at home and at school, described the teaching styles of parents and teachers, and discussed antecedents of school attainment for children at 7 years of age. (Author/RH)

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LANGUAGE IN THE TRANSITION FROM HOME TO SCHOOL

FINAL REPORT TO THE NUFFIELD FOUNDATION

JULY 1980

Gordon Wells and Peter French

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The research project, of which this is the final report, is the last phase of a longitudinal investigation that began in 1972. At that point, the main aim was to carry out a survey of language development in the pre-school years in order to provide a description of the sequence of development and to make an estimate of the range of attainment to be found in the normal population at three-monthly intervals between 15 and 60 months. A subsidiary aim was to seek for possible determinants of variation in rate and style of language development in the children's home environment.

The sample for the investigation consisted of 128 children, half aged 15 months and half aged 39 months, selected from a random sample to give equal representation to both sexes, four classes of family background and all four seasons of the year for month of birth. Ten observations were made of each child at three-monthly intervals, each observation consisting of a recording of the child's spontaneous linguistic interaction at home and the subsequent administration of tests of comprehension in the Research Unit at the University. Following transcription and coding of the recorded speech samples, the data were analysed in the ways outlined above, and the results were written up in the final report to the S.S.R.C. (Wells, 197b). The main findings from this phase of the research were as follows:

1. The most impressive finding from the research is the amount that all children have learned about communicating through language by the time they go to school. Almost every child has mastered the basic meanings and grammar of the language of his community and is using language for a variety of purposes in his interaction with the people in his immediate surroundings.

2. There is no single measure that gives a reliable general indication of level of language development over the whole of the age-range 1 - 7 years. Scores on tests were not found to be closely related to measures derived from spontaneous speech, nor was comprehension reliably found to be at the same level as production. This implies that, in assessing a child's level of language development, a profile should be constructed which includes measures of a variety of language skills.

3. Although the children varied very considerably in their rate of development, there was very great similarity amongst them in the sequence in which they mastered the various systems and sub-systems of the language. This similarity in sequence of development is explained in part by the relative complexity of the different elements to be learned; at the same time it seems likely that part of the explanation of the order in which learning takes place is to be found in the relative salience and frequency of the meanings that linguistic items encode in conversations about the situations in which children and parents are jointly engaged.

4. Although there were important differences between the children, these are not associated with such general characteristics as sex or class of family background. On the other hand, it is true that the minority of advanced and retarded children come from families with scores at the extremes on the scale of family background. However, by far the most important influence on rate of language development is the quality of the conversation that the child experiences, and this is not determined by the child's social background.

Starting in 1975, a small follow-up study was carried out, entitled 'Children Learning to Read', in order to investigate the antecedents of differential progress in the early stages of learning to read. This study involved 20 children, picked from the older group in the previous phase, who were observed once a month in their classrooms during the first two years of Infant School. In addition, interviews were carried out with the parents and Head and class teachers of the children in order to find out about the children's experience with respect to literacy both before and during the two years of Infant schooling. The main findings from this phase (Wells and Raban, 1978) were that, of all the factors investigated, it was the children's knowledge about literacy on entry to school that was the best single predictor of the children's attainment in literacy at age 7 years, and that this in turn was significantly associated with the parents' own interest in literacy and with the quality of their conversation with their children in the pre-school years. By comparison, differences between the schools in their provision for literacy and between the teachers in their organization of children's learning of literacy were much less significant in accounting for the variation in

the children's attainment. Oral language ability on entry to school was also found to be only marginally related to attainment in literacy at age 7, with oral comprehension being more important than production.

Taken together, the results of these two studies pointed to the very great importance of pre-school experience, for children's progress in the early years of schooling, and in particular suggested that it was the quality of parent-child interaction, rather than the degree of mastery of the language system itself, that differentially equipped the children to benefit from the learning opportunities offered at school. Compared with individual differences between the children on entry to school, it appeared, the differences in school experience, as ascertained from the interviews with the teachers and from the written observations, contributed little to the variation in attainment.

This latter finding was not altogether unexpected, since schools are clearly much more alike than homes. Nevertheless there were, to our intuitive judgment, substantial differences between the teachers in their styles of teaching and organization, and particularly in the ways in which they managed their interactions with individual children with respect to curricular activities. However, since we had no verbatim records of these interactions,we were unable to investigate such differences in a systematic manner.

The relative unimportance of variation in oral language ability for progress in learning to read was much less expected, particularly as linguistic variation, whether conceived of as 'difference' or 'deficit', has been invoked to account for the well-attested relationship between school attainment and social class. Since oral language ability at age 5, as measured on the basis of naturally-occurring conversation in the home, was not strongly associated with social background, yet attainment in reading at age 7 did show such an association, it appeared that it was not command of language, as such, that differentially facilitated the progress in school of children from different social backgrounds, but other differences in their pre-school experience and/or differences in the ways in which their command of language was called upon in classroom interaction.

Differences in the extent of congruence between the ways in which language is used in the two settings of home and school have been invoked by a number of writers to account for class-related inequalities in academic attainment (e.g. Bernstein, 1971; Tough 1977), and it has been suggested more specifically that mothers' question-answering

(Robinson and Rackstraw, 1972) and teaching styles (Hess and Shipman, 1965) vary in class-related ways, with middle-class mothers being more likely than working-class mothers to behave like teachers, with the result that middle-class children are likely to adapt more easily to the language demands of the classroom and hence to make more rapid progress. However, although there is some evidence of class-related differences in parental uses of language at home, there has been little systematic investigation of the way in which this affects their children's ability to participate in naturally occurring interactions with their teachers.

It was to address all these questions, through a continuation of the observations of naturally occurring linguistic interaction into the early years of schooling, that the third phase of the longitudinal study reported here was carried out. The work was also supported to a limited extent by a grant from the Social Science Research Council (HR 4541).

Section1. Outline of the Investigation

1.1 The sample of children, parents and teachers

The subjects for this phase of the research were selected from the younger group in the original sample, on the basis of term of school entry. 42 children were due to start attending Infant School in the calendar year commencing January, 1977, from whom 32 were selected in such a way as to maintain as closely as possible the representativeness of the original sample. In practice, the equal balance of boys and girls was maintained, but there was an over-representation of the lowest class of family background. The actual distribution is shown in Table 1. During the course of the investigation, several families moved house, involving also a change of school, but only one family moved so far away from Bristol that observations had to be discontinued.

Sex / Season of Birth	Family Background: Class A		Class B		Class C		Class D		Total
	M	F	M	F	M	F	M	F	
Spring	2	1	1	2	0	1	2	2	11
Summer	1	2	0	1	2	1	2	0	9
Autumn	1	1	0	2	1	0	2	1	8
Winter	0	0	1	0	1	1	0	1	4
Total	8		7		7		10		32

Table 1. Distribution of Project Sample by Season of Birth, Sex and Family Background.

Permission was obtained from the Local Education Authority to seek the co-operation of the schools that the children would attend, and all agreed to participate in the research. Twenty-seven different schools were involved in the first instance, as some schools took in more than one of the sample children. However, as a result of family moves, by the end of the study thirty different schools had been involved. Practice concerning the allocation of teachers to classes also varied from school to school; in addition, there were a number of unexpected changes of teacher in mid-term for various reasons, including several changes of Head Teacher. As a result, the study finally involved more than seventy different teachers.

Although a normal feature of children's experience of school, this high rate of change in teacher-pupil pairings was unsatisfactory from the point of view of the research, making any controlled comparisons between children impossible. It also led to difficulties, in a small number of cases, in keeping up the schedule of observations and assessments, as some teachers, who became involved in the investigation in its later stages, were reluctant to undertake the additional work required, as they had not been consulted in advance. In the end, however, with the exception of a number who refused to complete one questionnaire about themselves, all were finally persuaded to co-operate in the schedule of data-collection.

In order to avoid the project children being singled out for particular attention at school as a result of their participation in the research, a further five children from each school class were selected for study from the children who entered the same classes at the same time as the project children. This additional sample also provided a 'control' group with whom the project children could be compared in order to estimate how far they were representative of the larger Infant School population. The children in the control sample were tested and assessed in exactly the same way as those in the project sample; they were not, however, recorded, nor were their parents interviewed.

1.2 Types of data collected.

A. Recordings of spontaneous interaction.

All 32 children had been recorded at 3-monthly intervals between the ages of 15 and 42 months and the speech samples transcribed and coded according to the framework of linguistic description (Wells, 1973)

used in the first phase of the longitudinal study. In order to obtain an estimate of their oral language ability at the time of entry to school and to have evidence of their experience of linguistic interaction at home in the period immediately before the beginning of schooling, a further recording was made in the month before they started school. Unlike the previous recordings, this one took place during a morning only and consisted of nine five-minute samples at approximately 30-minute intervals between 9 a .m. and 1 p.m.

There were two reasons for this change in sampling method: firstly, as we had come to attribute a central role in children's language development to the quality of the interaction that they experienced, it seemed important to record long enough stretches of time to catch complete sequences of conversation. Whilst the original sample unit of 90 seconds had been appropriate for very young children, we had found that as the children grew older they frequently participated in sequences of conversation that extended beyond the limits of this sampling unit. Secondly, we planned to make a direct comparison between experience of interaction at home and at school and, since it was planned to confine the observations at school to the morning only, it was necessary to make the home recordings during the same period of the day. As with the earlier recordings, no observer was present during the course of the home recording, contextual information being obtained from the parents at some later point in the day.

Starting half-way through the first term, three observations were made of each child in his or her normal classroom environment during the first, second and sixth terms at school. In addition to an audio recording using a radio-microphone, as at home, a video camera and recorder were also used to provide a more informative record of each observation. In addition, a verbal commentary on the child's behaviour and its context was recorded on the second channel of the stereo audio recorder, together with a high-pitched 'bleep' to signal which of the utterances recorded on the tape were spoken by the particular child being investigated.

The total configuration of equipment, consisting of a video camera, recorder and small TV monitor, two radio receivers, two stereo audio recorders and a sound mixer and equalizer, were all arranged on a purpose-built trolley, which could be collapsed for transportation. This configuration was designed with advice from the Audio-Visual-Aids Department in the University and from engineers at Harlech Television. Because of the many individual components that had to be assembled for each observation and

then taken apart again for transport back to the University, considerable difficulty was experienced in keeping the total configuration in working order. On several occasions, attempted observations had to be abandoned because a fault had developed in one or another component or connection, and there was one quite long period when the video recording equipment was out of commission altogether. However, with the continuing support and assistance of the AVA Department and the School of Education technician, all the scheduled observations were finally made at an acceptable level of sound and picture quality. (Details of the equipment and of the methods of observation are given in an extract from the report to the SSRC. June, 1978 which is attached as Appendix 1.)

Following a demonstration of the equipment to the assembled class, a continuous audio recording was made of the signal received from the radio microphone worn by the child under investigation. For the first school observation, the video equipment was used to record eight five-minute samples at approximately 20-minute intervals throughout the morning (no video recording was attempted during the mid-morning break, as it was not possible to use the equipment out of doors in the playground). These samples were intended for the comparison with the equivalent samples recorded in the home. On the subsequent occasions of recording, a continuous audio recording was made as before, but the video equipment was used chiefly to record any interactions between the project child and any adults (teachers, nursery assistants, etc.) in the classroom. In addition to the audio and video recordings and the recorded spoken commentary, a written record was also kept by a second researcher, who observed the child's activities from a distance and who was responsible for signalling, via the 'bleeper', when the child spoke.

Since it may appear from the preceding description that the personnel and equipment required to make the observations were a very obvious intrusion into the everyday life of an Infant School classroom, it is worth emphasizing the minimal effect this had on the children's behaviour. Attention has rightly been drawn to the 'observer effect' in social science investigations (Labov, 1972), and it was to avoid such an effect that the home recordings were made without an observer present. With all the equipment required to obtain a satisfactory recording in a school setting, however, a similar strategy would have been impossible for the school observations. Nevertheless, it appears that the practice of demonstrating the equipment to the whole class at the beginning of the morning and allowing each child to see him/herself on the TV monitor was sufficient to assuage their curiosity; for the remainder of the morning they completely ignored the camera and the researchers

who were making the recording.

A similar assurance cannot be given about the effect of the observations on the teachers concerned. They were certainly conscious of being recorded and in all probability modified their behaviour accordingly. Presumably each tried to give a good impression of her professional competence, however this was conceived. However, since at no point did members of the research team discuss their practice with the teachers concerned, it can reasonably be argued that the researchers did not introduce any systematic bias into what they observed. If the teachers modified their behaviour because they were being observed, they did so according to their own views as to what would be considered good practice. The actual observations, even more than their answers to the teacher questionnaire, showed that such views varied quite considerably from one teacher to another.

Although as a matter of principle, there was no discussion between the research team and the teacher concerned about the success or otherwise of the activities that had been observed, a random sample of the video recording was played back at the end of the morning so that the teacher could see the sort of record that was being taken away for further analysis. Several teachers remarked on the fresh insight the recordings gave them into the way in which the individual children in their classes actually spent their time, and some quite spontaneously commented critically on their own behaviour as seen from an external point of view. This suggests that the video recordings could well be used to advantage in workshops or other forms of in-service education with teachers to sensitize them to the effects of different styles of teaching. Indeed, transcripts of some of the recordings have already been used to good effect in this way. It is hoped in the future to use some of the material more systematically in courses for teachers.

B. Tests

Both the project children and those in the 'control' sample were tested in their first and sixth terms in school. On the first occasion, four different types of test were administered:

i) Oral comprehension. Since no satisfactory test of oral comprehension for five year-olds could be found, a test designed for the earlier phase, 'Children Learning to Read', was modified slightly. This test consists of a sequence of items which make up a story about a family, which the child has to act out with a set of small dolls, model animals and other objects. In designing the test, the

aim was to provide a coherent context for each item and thus to give the whole activity a purpose which would be meaningful to the children asked to carry it out. From this point of view, the test was certainly successful, and there was no difficulty in getting the children to participate. It also served to discriminate amongst the children. However, until it is standardized on a much larger sample, no estimate can be given of its reliability. This 'acting out' test was supplemented by a more traditional story comprehension test. (taken from the Swansea Evaluation Profile, (Evans et al, 1978) in which the children had to listen to a story and then answer a number of questions. Both these tests were individually administered.

ii) English Picture Vocabulary Test. (Brimer and Dunn, 1963)
This standardized test of vocabulary comprehension has been widely used in research on children in the primary age-range. It was therefore included on both occasions of testing to allow comparisons to be made between this particular sample of children and the national norms.

iii) Knowledge of Literacy. Since an important part of the Infant School curriculum is concerned with the initial acquisition of literacy and success in this had been found to be strongly predicted by what the children knew about literacy on entry to school (Wells & Raban, 1978), it was decided to use the same instrument as in the 'Children Learning to Read' project. This consists of two parts: 'Concepts about Print' (Clay, 1972), a series of questions asked about a specially designed book; and 'Letter Identification', in which the child is asked to identify by name or sound the upper and lower case forms of the letters of the alphabet. Scores on the two parts were combined to form an overall estimate of knowledge of literacy.

The final test was concerned with visual discrimination of shapes and patterns and with hand-eye coordination. The items, which were selected from the Swansea Evaluation Profile, prepared for the Schools Council Compensatory Education Project (Evans et al., 1978), are based on the work of Marianne Frostig (Frostig and Horne, 1973). Only selected items were used, as the aim was to discriminate amongst the children rather than to carry out a full diagnostic assessment. The test was administered to the whole group of subjects in each classroom. (up to 6 children).

At the end of the sixth term, testing was aimed chiefly at obtaining measures of attainment in the two main curriculum areas:

i) Neale Analysis of Reading Ability (Neale, 1966)
This test consists of two parts: a measure of reading accuracy, based on continuous prose; and a measure of reading comprehension. The test has been standardized and permits a 'reading age' to be calculated for each part.

ii) Test of Number Operations.
This test was designed for the project in collaboration with Ms. Jean Young, of the Bristol Polytechnic.
The topics covered include the use of matrices, counting, the basic arithmetic operations carried out with physical objects and as mental calculations and the symbolic recording of these operations.

iii) English Picture Vocabulary Test
This was readministered for purposes of comparability.

C. Teacher Assessments

The tests were administered to provide as objective an assessment as possible of the children's attainment at the beginning and end of the study. However, tests can only sample a relatively narrow range of a pupil's knowledge or ability. In addition, as we had found in the first phase of the research, children from the lower end of the scale of family background have a tendency to perform less well under test conditions than they do in normal, spontaneous interaction. We felt it was important, therefore, to have an assessment of each child based on experience over an extended period of time of his behaviour in naturalistic situations. Since teachers, whether systematically or casually, are constantly making assessments of the children in their charge, it seemed appropriate to ask the class teachers to fill in a standard assessment form for each child in the project and control samples at the beginning and end of the two years of classroom observations. A further reason for asking the teachers to make these assessments was to allow a comparison to be made between a group of professional educators' evaluations of the children's abilities and the results of the tests administered in the same classrooms but under controlled conditions.

Each assessment consisted of a number of sections covering: social development, language development, general development (number and matching in term one; number and logical concepts in term six) and physical development.

In the second assessment there was also a section on literacy. Items took the form of alternative behavioural descriptions, the most appropriate of which the teacher was asked to tick for the child concerned. There were also a number of summary items, where the teacher was asked to rate the child on a five point scale centering on 'average'.

D. Parental Interviews

The parents of the project children were interviewed just prior to each child's entry to school and again at the end of the sixth term. In both cases, interview schedules were prepared which called either for factual information or for opinions that could be assigned on the spot to pre-coded categories or to positions on a five-point scale. There is, of course, a danger, when using this method, of imposing the researchers' categories on to the responses offered; but the alternative method, of attempting to record subjects' unstructured responses verbatim and then code these at a later time, merely postpones the point at which the researchers' categories are imposed and is very much more time-consuming. For both these reasons, the first method seemed preferable; however, subjects were also invited to add any information that they thought was relevant to the topics covered by the questions, and this was recorded in note-form, where it amplified the structured response.

In the first interview, questions were asked about the child's pre-school experience and preferred activities; about any steps the parents had taken to prepare the child for school, with further probe questions where responses made specific reference to activities concerned with literacy; about the functions for which the child used language; and about the parents' knowledge of and attitude to the child's school and their own role in the child's education.

In the second interview, questions were asked about the parents' own uses of and opinions about literacy; about the parents' interest in and involvement in the child's activities at school, with probe questions to elicit specific details, if mention was made of helping the child with school work. The opportunity was also taken to ask questions about the regular social activities of the parents outside the home and about the sort of support they could call on in case of difficulties of various kinds. These questions were taken from questionnaires being used in the

E. Teacher Questionnaire

Each teacher who taught any of the project children at any point during the two years was asked to complete a questionnaire. This instrument asked for details about: training and experience; school organisation; methods of recording children's progress; methods of teaching the basic skills of literacy and number; organization of the curriculum in general; and planned opportunities to discuss individual children's progress with their parents. Although every attempt was made to phrase the questions in a non-threatening form, some of the questions aroused hostility in a number of schools, particularly those questions which asked about how the curriculum and teaching methods were decided upon. In some cases it was the class teacher and in others the Headteacher who objected to these questions, on the grounds that such matters were not relevant to the children's progress in school. As a result of these refusals, it was not possible to use the results of the administration of this instrument in the overall statistical analysis.

F. Mothers' and Teachers' Styles of Teaching

Following the home recording and the first school recording of each child, the mother or the teacher was asked to help the child carry out two tasks. The first involved sorting a stack of picture cards into groups of cards that 'went together'; the second involved telling a story based on a sequence of pictures. In both cases the aim was to see how the adult concerned would interact with the child on an open-ended task where there was no one 'correct' solution. The complete session was recorded in sound and subsequently transcribed, and the protocols are being analysed in a variety of ways in order to capture similarities and differences in 'teaching styles'. This part of the research was planned and is being carried out by Ms Janet Adams, in preparation for the submission of a thesis for the M. Ed. degree.

1.3 Analysis

The results of the analyses carried out on these various types of data will be presented and discussed under three main headings: a comparison of children's language experience at home and at school; the teaching styles of parents and teachers; and antecedents of school attainment at 7 years. First, however, an overview will be given of the history of the project and an account presented of the way in which the problems encountered were dealt with.

Section 2. A Comparison of Talk at Home and at School

Over the project's three years duration a number of in-depth qualitative analyses have been made of various aspects of the home and school recordings. These include:

1) a study of how teachers and parents may act in complementary ways to further the child's communicative ability and shared understanding of the world (Wells, 1978c).

2) a detailed investigation of teachers' questions with particular reference to the strategies they use both for helping children answer their questions successfully and those they use for guiding children's attempts to correct their own unsuccessful answers (French and MacLure, 1979).

3) a study of the strategies children deploy in answering teachers' questions on occasions when they do not have the information required of them (MacLure and French, 1980).

4) a detailed analysis of the changing communicative demands and opportunities provided for one child upon her transition from home to school (Wells and Montgomery, in press).

5) a general characterisation of the similarities and differences between home and school conversations, and a consideration of the importance of these differences for the child entering school (MacLure and French, in press).

Despite the theoretical and practical insights into the processes of interactive development, teaching and learning provided by these qualitative studies, they have by necessity been restricted in focus. And, quite obviously, it would be unrealistic to attempt to apply such in-depth analytic techniques to the whole of our data base of home and school recordings. The opportunity for making generalizable developmental and educational statements provided by the longitudinal recordings of a balanced sample of 32 children is vast and, in many ways, unique. And, because of this, it has been necessary to develop a set of categories for systematically coding interactions between the children and their parents and teachers so that we may both chart the children's interactive development over time, and arrive at a statistically based formulation of the differences between home and school communication for various groupings of children within the sample.

The development of such a scheme has not been without its problems. Indeed, the viability of establishing a set of categories which can be systematically applied to large amounts of recorded language has formed the basis of one of the major controversies in the recent history of language study. Because of this, a far greater amount of research time and effort than was originally anticipated has been devoted to resolving the methodological problems of coding. As a result of this, statistical analysis of the data has not progressed as rapidly as we expected. The statistical findings available so far, however, are presented and discussed below. But, before we proceed to these findings, it is necessary to make clear the methodological bases of the codings by which they were produced.

2.1 Methodological Bases of the Codings.

At a very basic level of analysis, coding is relatively unproblematic. For example, units of analysis such as utterance and turn at speaking can be defined with reasonable clarity. These definitions can then be used to segment the transcriptions of conversation in such a straightforward way that all that remains to be done is to count up the units so arrived at and to compare their distributions between speakers within and across contexts. Likewise, because of the efforts of theoretical linguists, we have available ready-made criteria for deciding upon the grammatical category to which utterances belong. It is, however, when we reach the level of conversational structure and Speech Acts that problems really begin to arise. Of course it is very easy for any one of us, as native speakers of the language, to identify an instance of, say, a request when we hear one. But, for analytic purposes, it is not sufficient that we simply rely upon our cultural and linguistic intuitions in classifying an utterance as a request. For a coding scheme to be considered theoretically adequate, it must carry explicit criteria by reference to which actual utterances can be ascribed to the categories within it (McTear, in press). This condition of adequacy has not, despite the sustained efforts of researchers, been met by any existing model for classifying conversation structures or functions. Indeed, the work of Sinclair and Coulthard(1975), which is perhaps the most fully-developed system for the linguistic description of formal lessons in junior schools, includes the explicit recognition that, despite the fact that the 'terms in the descriptive apparatus should be precisely relatable to their exponents in the data..... There will always be problems of interpretation, marginal choices etc., but that is a feature of all practical classification.' (1975:16)

The obstinacy of this problem was recognised by members of the research team from an early stage, and a detailed exposition and empirical demonstration of it was produced by French (in press). And, after protracted attempts by the research team to provide lists of absolute criteria for the application of conversational coding categories, it was decided that the best way forward was temporarily to abandon the exercise, and to adopt the, by now, well-established alternative strategy of working with broader coding guidelines. In order, though, to ensure the replicability of the analysis, team members, together with Dr. Mary Guttfreund, used these guidelines independently to code the same stretches of transcribed data, and a high degree of inter-coder reliability was subsequently established.

In this sense then, we have had, by necessity to sacrifice the linguistic-theoretical adequacy of this part of the coding scheme in favour of gaining practical, educational insights into home and school conversations. In terms of the findings put forward below, this qualification applies mainly to the sections on Move, Requests and Evaluations.

2.2 The Sample for the comparison of talk at home and at school

The specific outcome of the methodological problems set out above is that, to date, codings of the final home and initial school recordings of 7 of the 32 children in the sample have been completed and analysed. Despite the fact that the grant has now expired, however, codings are continuing to be applied to data from further children in the sample. But, until such time as more broad-based statistical results are available, the statements we can make are extremely tentative. Further, because a sample of 7 children is insufficient to make any generalisations about social class- or gender-based differences in children's experience or use of language in the home and school-settings, such variables are excluded from the preliminary, normative characterisations offered here.

Finally, the 7 children upon whom these statements are based were selected as a random, rather than as a representative, sub-sample of the whole and very occasionally our statistical findings do not accord neatly with the ethnographic impressions of school-based conversation which were gained in the course of making the recordings and carrying out the qualitative studies outlined earlier in this section. Whenever this is the case, indication to that effect will be given. In order to aid interpretation of the statistics, ethnographic understandings have, in a limited way, been introduced into the discussion.

2.3 Statement of Preliminary Results

A Relative proportions of speech produced by participants in home and school settings

(i) By Utterance

The first measure of the amount of speech produced by participants in the home and school settings is that of the utterance. Because of various types of 'interference' (situational noise, excessive distances between one of the speakers and the radio-microphone etc.), there are occasional instances where it has not been possible to provide an adequate transcription of what was said. The project transcribers, however, had in most cases extensive experience of determining boundary points between utterances, and so, even when this was the case, they were nevertheless able to indicate how many utterances had occurred. We can, then, assume that the number of utterances indicated on the transcripts is a reasonably accurate reflection of the number produced by the participants.

Although the use of a cardioid microphone allowed us to pick up additional context information in the form of 'peripheral' conversations in which the subject was not directly involved, this talk has been excluded from the analysis presented here. The categories of utterance upon which the figures are based are:

a) utterances by the subjects to adults

b) utterances by the subjects to other children

c) utterances by adults to the subjects(sometimes as part of a group)

d) utterances by other children to the subjects(sometimes as part of a group)

TABLE 2 *

		No.of Utts.	Percentage of Utts.
HOME	Subject to Parent	883	41.7%
	Subject to Other Children	239	11.3%
	Parents to Subject	836	39.5%
	Other children to Subject	159	7.5%
	Total	2117.	100%

SCHOOL	Subject to Teacher/Assist.	306	12.0%
	Subject to Other children	785	30.9%
	Teacher/Assistant to Subject	711	27.9%
	Other Children to Subject	742	29.2%
	Total	2544	100%

* Figures in all tables for all categories for the 7 subjects are compounded.

From these figures we can draw out various points of convergence between the two settings. The first is that, in terms of the overall number of utterances produced, schools and homes are remarkably similar. Also, although it would seem that the subjects received rather more speech from their parents than from their teachers, the imbalance is not too striking. And again, when we consider the total number of utterances produced by the subjects we find yet another rough equivalence between the two settings.

Despite these similarities, however, there is one striking difference. This relates to how the subject's utterances were distributed within each setting. At home, from a total of 1122 utterances produced by the subjects 883 or 78.7% were to the parent whilst only 239 or 21.3% were to other children. At school, the trend is reversed. Of a total of 1091 utterances, only 306 or 28.0% were to the teacher or teaching assistant, whereas 785 or 72.0% were to other children.

It would be premature to represent this difference in terms of schools providing reduced opportunities for children to talk to adults, for there are a number of possible reasons for the low incidence of subject to teacher utterances. It may, for example, be the case that teachers are extremely open to approaches by pupils and perfectly willing, within the constraints of time etc. to listen to what they have to say, but that the accoutrements of 'discovery learning' (sand-trays, water-tanks, building blocks etc.), so prevalent in reception classrooms, provide a far greater attraction than talking to teacher. Alternatively, children may well recognise that teachers are often eager to transform any spontaneous, casual talk which pupils offer to them into bases for 'learning experiences', and may therefore attempt to keep their participation in such encounters to a minimum.

Despite these possibilities, however, it would seem, from the qualitative studies we have carried out, that certain teaching modes do not encourage a large degree of pupil participation. These modes receive some discussion in the section below on Requests. In the absence of a detailed study of the contexts in which the subject to teacher utterances of the particular 7 children under consideration were generated the most we can say here is that a teacher-dominated form of discussion may be a contributory factor to their relatively low frequency. This particular possibility, though, does receive some credence from the gross imbalance between the number of utterances directed from teacher to subject (711) and those directed from subject to teacher (306).

(ii) By turn

The second unit used to measure the relative contributions of each participant is that of turn at speaking. There are marginal problems of definition vis-a-vis this unit. For example, during the course of a conversation one speaker may appear to have completed his turn, yet his interlocutor may not immediately take the floor and, after a pause, the original speaker will re-commence speaking. The dilemma then is whether we are to count this as 2 separate turns or merely as one 'staggered' turn. As a purely practical solution to this problem, it was decided that a re-commencement by the same speaker was to be counted as 2 turns if the lapse in conversation was of more than 4 seconds in duration.

The categories of participants by whom the turns were taken are the same as those used for the analysis by utterance.

TABLE 3

		No. of turns	Percentage of turns
HOME	Subject to Parent	542	41.1%
	Subject to other child(ren)	132	10.0%
	Parent to Subject	544	41.2%
	Other child(ren) to Subject	101	7.7%
	Total	1319	100%
SCHOOL	Subject to Teacher/Assistant	218	15.3%
	Subject to other child(ren)	372	26.1%
	Teacher/Assistant to Subject	466	32.7%
	Other child(ren) to Subject	371	26.0%
	Total	1427	100%

As the above table shows, an analysis of the relative distribution of talk in terms of turns at speaking roughly reacapitulates the distributions produced by the analysis by utterance. What is of interest, however, is that the average number of utterances per turn for the participants is different for the two settings.

TABLE 4

		Average no. of utterances per turn
HOME	Subject to parent	1.63
	Subject to other child(ren)	1.81
	Parent to Subject	1.54
	Other child(ren) to Subject	1.57
	For all speakers	1.61
SCHOOL	Subject to Teacher/Assistant	1.40
	Subject to other child(ren)	2.11
	Teacher/Assistant to Subject	1.53
	Other child(ren) to Subject	2.00
	For all speakers	1.76

On this measure of utterance per turn we again find a quite severely depressed figure in the category Subject to teacher. One rather more encouraging aspect of these data, however, is that they suggest that the transition to school does at least provide some contexts in which children may develop their talk in ways which they do not at home. The comparatively long turns between children interacting alone can be taken to indicate quite extensive topical development.

One possible reason why this opportunity is not made such extensive use of at home in interactions between the subjects and their siblings is that, in all cases, the subjects were 4.10 years old - i.e. just pre-school age - and any siblings still at home at the time of the recordings were, therefore, considerably younger and at a less mature stage of communicative development. Moreover, the transcripts of child-child interaction at school indicate quite strongly that a proportion of the talk is of a 'newsy' nature: aspects of television programmes, stories of what happened the previous evening, 'My dad's got .... ' etc. - topics which require some lengthy exposition to a listener who was not present at the event being referred to. The mere fact that pre-school age siblings spend more of their time together than do school peers might well mean that a great many such events are shared and therefore do not require detailed exposition or comment.

(iii) By Move

Although the measures of utterance and turn can give us an indication of how much talking is done by whom and to whom, they do not provide us with information about which speakers are taking the initiatives in conversation, who is 'leading' and who is 'following'. Because of this, the home and school transcripts for each of the 7 children have also been coded in terms of a modified version of the discourse classification system developed by Wells, MacLure and Montgomery (in press). The categories from this scheme which are of relevance here are those of Initiate, Respond and Return. For a full exposition of these categories, and how they interrelate, we would direct attention to the original work. The information below, however, should be sufficient to gain a rough working conception of how they relate to the data.

The basic element of conversational structure within the scheme is the Exchange. An Exchange consists, minimally, of an Initiating Move in first position and a Responding Move to follow. These Moves may take the form of one participant giving information, and the other acknowledging it, as in the following Exchange:

1)	Child:	Mummy (v) that's a big car	Initiation
	Mother:	Mm	Response

Or, they may consist in one participant requesting information and the other giving it in compliance:

Mother:	Do you want carrots?	Initiation
Child:	Yes	Response

Many interactions such as this last, however, have a third Move whereby the Initiator of the Exchange acknowledges that he has received the information he requested. In these cases (though in theoretical, linguistic terms the relations between the Moves are considerably more complex than this), we may say that the first Response gives rise to a second one.

Thus:

Mother:	Do you want carrots?	Initiation
Child:	Yes	Response
Mother:	Right oh	Response

Likewise, in question and answer Exchange between teachers and pupils, we find teachers producing a similar, second Responding Move, but one which is evaluative in nature:

Teacher:	What day is it today Betty (v)?	Initiation
Child:	Tuesday	Response
Teacher:	Yes Tuesday	Response

It will be clear from these examples that there are different types of Initiation and of Response. For the purposes of the present coding exercise, however, we have not differentiated within the two categories, but information on the different ways in which the various speakers Initiated and Responded in the two contexts is readily retrievable from the Discourse Function aspect of the coding scheme. Although an analysis of this aspect of the coding is not yet available, it is, envisaged that any subsequent report on the data would include such information.

The third and final category of Move included in the Scheme of Wells et al. is that of Return. Whilst Initiating Moves characteristically receive Responses, there are some occasions where they pose some sort of problem for the second speaker. These problems may, for example, be ones of hearing or lack of understanding and when this situation arises, the second speaker can produce a Return Move which requests the first speaker to re-Initiate. The full exposition of the structural properties of Exchanges containing Returns set out in the original scheme is somewhat tangential to the concerns of the present report, but a working idea of how this category has been used in coding the home and school transcripts can be gained from the following examples:

Child:	I'm going out	Initiate
Mother:	What?	Return
Child:	I'm going out	re-Initiate

Child:	Have I to do this yellow?	Initiate
Teacher:	Mm?	Return
Child:	Have we to do this one yellow?	re-Initiate

The relative distributions of the three categories of Move - Initiate, Respond and Return- among participants in the home and school settings are represented in the tables below:

TABLE 5

Home: Subject to Parent

	Number	Percentage
Initiate	261	47.4%
Respond	242	44.0%
Return	37	6.6%
Total Moves	550	100%

Home: Parent to Subject

	Number	Percentage
Initiate	175	34.7%
Respond	283	56.2%
Return	46	9.1%
Total Moves	504	100%

Home: Subject to other children

	Number	Percentage
Initiate	47	46.0%
Respond	50	49.0%
Return	5	5.0%
Total Moves	102	100%

Home: Other child(ren) to Subject

	Number	Percentage
Initiate	31	40.8%
Respond	42	55.2%
Return	3	4.0%
Total Moves	76	100%

School: Subject to Teacher/Assistant

	Number	Percentage
Initiate	68	29.7%
Respond	160	69.9%
Return	1	0.4%
Total Moves	229	100%

School: Assistant/Teacher to Subject

	Number	Percentage
Initiate	227	61.4%
Respond	150	37.3%
Return	5	1.3%
Total Moves	402	100%

School: Subject to other child(ren)

	Number	Percentage
Initiate	199	60.5%
Respond	107	32.5%
Return	23	7.0%
Total Moves	329	100%

School: Other child(ren) to subject

	Number	Percentage
Initiate	229	66.2%
Respond	100	28.9%
Return	17	4.9%
Total Moves	346	100%

The figures presented here demonstrate that the subjects in the sample made a relatively large number of initiating moves in interactions with their parents at home. Indeed the picture which emerges when we compare the number of child to parent initiations with those of parent to child is one of the child as a conversational 'leader'. The transition to school, however, is marked by a decrease in child to adult Initiations and an increase in child to adult Responding moves which suggest that children's contributions to conversations with teachers are very often made on the teacher's terms or at her request.

Again, as we saw from the measures of utterance and turn, communication between children at home measured in terms of overall Moves is far from abundant. The figures for the school setting, however, show marked increase of all categories of Move in child-child interactions. There is, in particular, a very high proportion of Initiating Moves in relation to the other categories for both the subjects and the other children. This imbalance can possibly be explained by the fact that, there are a number of 'free-play' sessions included in the samples of coded speech. Whilst egocentric speech was excluded from the analysis, it nevertheless happens that when children are playing together many ostensibly socially-directed utterances produced by one child are not taken up by the other; hence, the number of Initiations produced in these situations not matched by a comparable number of Responses.

Finally, it may be noted that Return Moves are rather more frequent in the home data than in those from the school. At present we can offer no interpretation of this, and it may well be that, as the coding scheme is applied to the interactions of further children within the sample, the discrepancy will diminish.

B. Adult Incorporation

Exchange structure defined in terms of Move is one way of looking at Coherence within interactions; another is to examine the ways in which the content of one speaker's contributions takes account of what the other speaker - or indeed that same speaker - has previously said or done. This type of examination is referred to as an analysis of incorporation.

In the home and school recordings of the 7 children we have assigned each adult utterance to the subject to one of 13 incorporation categories. The first of these categories indicate that the adults' utterance relates primarily to and incorporates in one way or another previous speech or activity produced by the subject. The second 5 indicate that the adult's utterance relates mainly to or incorporates her own previous contribution, and the remaining category applies to utterances which perform neither function, but introduce new topics.

(i) Adult-incorporation of child's contribution

a) One way in which the adult may take account of or incorporate the child's speech into that of her own is by Extending it semantically:

Child: That's been done in red

Teacher: It's a nice rich colour isn't it? Ext. S. - Child

b) In the above example, the adult's Extension of the child's meaning was not produced in answer to a question. In order, then, to discriminate cases where the child has actually solicited an Extension from the adult by means of a question we have assigned them a separate coding, Answer Extend

Child: Where's daddy?
Mother: Daddy's gone to work. Ans. Ext. S. -Child

c) A third means by which adults may incorporate a child's meaning into their own speech is, rather than Extending it further, to merely paraphrase it or Expand it syntactically:

Child: Rabbit begins with 'r'.
Mother: Yes, 'r' is for rabbit Exp. S. Child

d) A fourth alternative open to adults for incorporating the child's contribution is that of Repeating his utterance, as in the sample below:

Child: Daddy's gone to work
Mother: Daddy's gone to work yes Rt. S. Child

e) The previous four categories of adult incorporation all involve, in one way or another, endorsing the content of the child's speech. In some instances, however, teachers or parents may wish to modify or correct the child's meaning. This is done by Substituting what was said with Contrasting information.

Mother: Four and eight are --- ?
Child: Erm - fourteen
Mother: No
Four and eight are twelve Subs. Cont. S. Child

f) In parent-child interactions such as that in (c) above, and in many teacher-pupil discussions, a proportion of the adults' speech is devoted to evaluating the contributions made by the child. Whilst this activity can be performed through several of the other categories of incorporation in this section, there are a number of utterances which would seem to have this function alone. These are mainly of the type 'Yes', 'No', 'That's right', 'Good girl' etc., and are coded as Evaluation Tokens.

g) Interactions do not always consist entirely in the spoken word. Some turns comprise non-verbal activities, and just as the adult may semantically Extend the Speech of the child,she may also comment upon or Extend the child's non-verbal Activity:

Teacher: Let me see what you've done
Child: (shows teacher her book)
Teacher: Right
You've drawn it all in yellow Ext. A. Other

ii) Adult-incorporation of own contribution

Most of the categories deployed in coding adult utterances which primarily relate back to or incorporate their own previous contributions to the interaction parallel quite closely those for coding utterances which incorporate the contributions of the child. For example, just as the adult may repeat the child's contributions, she may also repeat her own. The categories which stand in parallel in this respect are:

a) Extend speech self
b) Expand speech self
c) Repeat speech self
d) Extend activity self

In addition to these, however, we have included the further category Reformulation, Reformulation occurs mainly in the context of pedagogic interactions. When a teacher or parent asks a child a question for the purposes of testing his knowledge or competence and that question receives an answer which is considered inappropriate (or no answer at all) rather than taking the option of correcting the child outright - i.e. of Substituting contrasting information - they often reproduce the question in a semantically modified form. Such semantically modified re-presentations of questions are classified as Reformulations. The following is an example:

Teacher: What are they planting?
Child: (no response)
Teacher: Are they planting rice or flowers? Ref

Finally, in addition to adult utterances which incorporate the child's previous contribution and those which relate primarily to the adult's own, there are some utterances which perform neither of these functions. These utterances are coded as Topic Introducers.

The frequencies of occurrence for the various categories of adult incorporation are presented in the table below.

TABLE 6 *

Home	Percentage
Extend Speech child	9.8
Answer Extend Speech child	13.9
Expand Speech child	4.1
Repeat Speech child	2.6
Substitute Contrasting Info Child	5.1
Evaluation Tokens	0.6
Extend Activity Child	3.6
Extend Speech Self	35.6
Expand Speech Self	3.0
Repeat Speech Self	4.0
Extend Activity Self	0.2
Reformulate	2.2
Topic Introducers	15.3
TOTAL	100%

School	Percentage
Extend Speech child	12.1
Answer Extend Speech child	3.1
Expand Speech child	1.2
Repeat Speech child	6.1
Substitute Contrasting Info. Child	1.6
Evaluation Tokens	5.6
Extend Activity Child	24.6
Extend Speech Self	27.3
Expand Speech Self	2.8
Repeat Speech Self	8.4
Extend Activity Self	0.3
Reformulate	2.2
Topic Introducers	4.7
TOTALS	100%

* Figures here are in percentage form only as the actual numbers of utterances produced by adults in the two settings are set out in Table 1.

These data indicate that overall a much larger number of the utterances of the parents of the subjects had the function of semantically Extending their verbal contributions to the interaction than was the case with their teachers (Parent - Extend child + Answer Extend child = 23.7% Teacher - Extend child + Answer Extend Child = 15.2%). However, whilst parents did so mainly in response to the subjects' questions (13.9% Answers - Extend child as opposed to 9.8 Extend child) it would seem that the teachers in the sample tended to Extend the child's contributions rather more spontaneously or on their own initiative (12.1% Extend Child as against 3.1% Answer Extend Child). The low incidence of utterances in which the teachers extended the subjects' contributions in answer to requests ties in quite closely with the finding presented under the analysis by Move that the subjects did not, on the whole, make many Initiating moves to their teachers.

On the face of it, the relatively high percentage of teachers' utterances which Extended the Activities of the subjects is quite encouraging. On the basis of our familiarity with the actual transcripts, however, we suspect that many of the utterances so coded were concerned with purely organisational or disciplinary matters ('That's no way to share out the crayons', 'Stand properly in the queue' etc.) Only a reanalysis of the data by context could reveal whether or not this is the case.

The comparatively large percentage of Repeats of the subjects' utterances by teachers may well be explained in terms of an evaluation strategy, prevalent in teacher-class discussion sessions, which consist of Repeating the child's answer, often in conjunction with an Evaluation Token:

Teacher: Where does the Queen live?
Child: London
Teacher: London
That's right

And of course, the higher percentage of Evaluation Tokens in teacher-pupil talk is entirely what one might expect.

Interestingly, the teachers of the subjects produced a lower percentage of utterances codable as Substitute Contrasting information than did the parents. This might be taken to suggest that rather fewer outright corrections of children's contributions to the interaction take place in school. Recent literature on the management of correction in a variety of contexts has suggested that there is a general preference for interactants to invite one another to correct their own mistakes rather than simply making the correction for them (cf. Drew, in press). This general preference may,

in fact, be supplemented for teachers by the current ideology of 'discovery-learning'. Thus the onus is placed quite heavily upon the child in school to find out for himself, to correct his own contributions. This analysis is supported by the qualitative studies of teachers' questioning techniques carried out by members of the research team.

Finally, a higher percentage of the utterances of parents than those of teachers was devoted to introducing new topics into the conversation. Again, this finding is perhaps what we would expect. Many conversations between children and their parent are quite desultory in nature and move quite rapidly from one set of concerns to another. Teachers, on the other hand, often have set educational aims and purposes in mind in interacting with their pupils, and the achievement of these goals frequently requires sustained attention to a single topic.

2.4 Conclusion

We began this section of the report by stressing the hazards of moving prematurely from narrow-based statistical trends to more global explanations. The following discussion must, therefore be extremely tentative.

3 of the most striking trends demonstrated by the data were:

1) The subjects, on all measures employed, directed more speech to adults in the home setting than in the school.
2) Teachers directed much more speech to the subjects than did the subjects to their teachers.
3) Of the relatively small amount of speech the subjects did direct to their teachers, by far the greatest proportion of it was in response to the teachers' lead.

A study by McHoul (1978) has shown that formal discussions in classrooms are governed by a set of rules which asymmetrically distribute between teachers and pupils rights to take turns at speaking. If the teacher asks a question which a pupil subsequently answers, the floor is not then open to simply any other speaker in the way that it might be in other, less formal, contexts. Rather, the teacher reserves for herself the right to speak next so that she may evaluate the answer and pose a further question. The pattern of turn-taking which results then is: Teacher, Pupil, Teacher, Pupil, Teacher.....

We included in our sample of adult speech not only utterances which were directed to the subject alone, but also adult utterances which were directed to groups of children of which the subject was a member. Speech from the teacher in discussion lessons of this type therefore formed a portion of the corpus analysed. On occasion, the group in question was

the class as a whole. Two points are relevant here. Firstly, we may note that as the teacher is taking alternate turns at speaking, the intermediate turns are shared among a group comprising upwards of 25 potential speakers, of which the subject is only one. Thus, even though, in these situations, the teacher may be directing a great deal of speech to the subject as one of a group, his opportunities to speak back are constrained by the teacher's concern to see that turns are distributed equitably among the children. The occurrence of these teacher-group discussion sessions in our samples of classroom interaction may well throw light upon trends (1) and (2) above.

In order to provide some tentative interpretation of trend (3), we would point to the Exchange structures typical of these discussions. Consider the following idealized representation of such interaction:

Teacher:	Question	Initiation
Pupil:	Answer	Response
Teacher:	Evaluation	Response
	Question	Initiation
Pupil:	Answer	Response
Teacher:	Evaluation	Response
	Question	Initiation
Pupil:	Answer	Response
	Evaluation	Evaluation

In each Exchange, the teacher makes one Initiating Move and one Response. The pupils, on the other hand, make only one Responding Move. In view of this, the gross imbalance reflected in our statistics between subject to teacher Initiations and teacher to subject Initiations is not too surprising. Nor is the fact that the majority of Moves made by the subjects to their teachers were Responses.

The interpretations offered here of course rest upon the assumption that formal, teacher-group discussions constitute a significant proportion of the interactions coded. This hypothesis could only be tested by a more detailed analysis of the corpus in terms of interactional context. Such context codings have been applied to the transcripts, and should statistical analysis be taken further, we would then be in a position to make a more confident statement on this issue. For the present, however, we must allow the interpretation no more than speculative status.

A fourth, rather encouraging tendency reflected in the figures was the large increase - again on all measures of child - child speech upon the transition from home to school. In particular, we are tempted to speculate that the opportunity for producing relatively extended turns at speaking when interacting with other children in the classroom might be an important factor in developing the subjects' abilities of self-expression and topic exposition. We must, however, be extremely wary of moving directly from our findings on language use and experience to statements about their cognitive or educational implications. Measures of the amount of talk which a child produces, or, for that matter, the amount directed to him, provide, in themselves, no indication of what is going on in educational terms. Intuitively, it seems that much of the talk which occurs in homes and classrooms is quite empty of educational and developmental consequences, and, conversely, a great deal of learning is done 'in silence'.

Section 3 The Teaching Styles of Parents and Teachers

Although most of the young child's conversation with adults, particularly in the home, is not guided by a systematic curriculum, there is no doubt that many situations arise in the course of everyday life at home and in the routines of the reception class from which children have an opportunity to learn, and where what is learned is strongly influenced by the way in which the adults contribute to the conversations to which the situations give rise. Of particular importance, one might hypothesize, are situations which pose a problem to be solved or a task which requires an organized sequence of steps for its satisfactory completion. For, as well as offering opportunities for the acquisition of specific skills and items of information, such problems and tasks have a more general importance in that, through engaging in them, children establish attitudes towards problem-solving and goal-directed learning which will be important for their later experience at school and in adult life beyond school.

The sorts of attitude that are involved here include a willingness to take the initiative in seeking for a solution, the search for and application of relevant general principles, concentration and perseverance and, perhaps most important, confidence in the value of systematic, thoughtful behaviour. It seems probable that such attitudes are not acquired spontaneously by all children and that adults can assist in their formation by the way in which they interact with them when appropriate occasions are presented quite naturally in the course of less structured activities.

Such is the view put forward by Donaldson (1978), who stresses the importance for intellectual development of acquiring the ability for 'disembedded thinking', that is to say the ability to recognize a particular problem or task as an instance of a more general kind to which more inclusive and abstract principles apply. Bruner (1972) also emphasizes the importance of the development of a conscious, reflective attitude to experience and of the ability to use the symbolic power of language to categorise objects and events in more than one way and to use such verbal formulations to tackle problems symbolically and relatively independently of their particular context of origin.

To foster these skills and attitudes is clearly one of the major aims of formal schooling and it is therefore to be expected that teacher would deliberately present children with tasks

of various kinds that would provide opportunities for their acquisition, and that they would typically interact with them in relation to such tasks in ways that would foster their development. Parents, on the other hand, might not be so aware of the importance of such learning or might not recognize or make use of the opportunities when they arose spontaneously. However in this respect one might expect to find differences between parents, (cf. Hess & Shipman, 1965) depending on the extent to which they had themselves acquired such skills and attitudes in the course of their own education or as a result of their experience since leaving school.

Given the general agreement amongst educators about the importance of adult assistance in children's learning in this broad area, it seemed important to investigate the ways in which parents and teachers managed such opportunities and to discover whether there were any systematic differences, either between or within the two groups. Examples of task-related talk are easy to find in the naturalistic recordings we have made of classroom interaction, but they are somewhat rarer in the home recordings and, when they do occur, they arise in relation to such a wide variety of topics that it is difficult to make systematic comparisons. It was decided, therefore, to arrange for the same tasks to be tackled by all the children, firstly at home with their mothers and subsequently at school with their teachers.

In selecting the tasks, care was taken to choose ones which would be interesting for the children and recognizably meaningful to the mothers, but at the same time not such as might already be part of the teachers' routine classroom practice. Furthermore, the aim was that the tasks should have clear goals but not 'correct' solutions, so that the adults would see their role as one of encouraging and assisting the children in carrying them out, rather than giving very specific instructions or completing the tasks themselves. In this way we hoped to observe the more general facilitative strategies employed by the adults and to ensure that these strategies would involve a considerable amount of verbal interaction between child and adult.

Two tasks were finally selected: sorting a stack of picture cards and making up a story about a sequence of pictures. Both tasks were designed and administered by Ms. Janet Adams, and the analysis of the data from the two administrations of the first task to 20 of the children forms the subject matter of the thesis she is preparing for the degree of M. Ed. by Research. The remainder of the data still awaits analysis. For this reason only the first task will be described in this report.

3.1 The Picture-Sorting Task

The task required the child to sort a stack of picture cards into groups 'that go together' in whatever way he wished. The adult was instructed to help him in whatever way seemed appropriate and it was emphasized that there was no one correct way of sorting. On each occasion, at home and at school, the child was presented with 20 cards, 3" x 3½", on which coloured pictures had been drawn in such a way that there were various possible sets: people, clothes, food etc.; objects found in particular parts of the house or associated with one or other member of the family; predominantly of one of four primary colours; and so on. 10 cards (4 people, 4 toys, a house and a block of flats) were included on both occasions, the remaining 10 were systematically varied between the two occasions to ensure that the task was not seen by the child as a mere repetition. However, as the task was always carried out first at home, following the recording prior to starting school, there may have been a learning effect which led to the children performing differently on the second occasion.

The task was satisfactorily completed on all occasions, although one or two of the mothers seemed to have some difficulty initially in understanding what was expected of them. In some cases, after all the cards had been sorted in one way, they were reshuffled and the operation was carried out again, using different principles of grouping. Adult-child pairs also varied in the amount they talked, both in relation to the performance of the task and about extraneous matters that intervened. All speech that occurred during the performance of the task was recorded and subsequently transcribed and notes were made on the spot of task-related non-verbal behaviour.

3.2 Patterns of Sorting and the Associated Talk.

In considering the ways in which the cards were sorted three levels were distinguished:

1. the first level concerns the complete sorting operation and identifies the general principle or principles adopted. Four basic principles can be discerned, which may occur singly or in some sequential combination: a) functional grouping according to the actions performed by or on the person or object portrayed on the card; b) possession, objects being grouped according to their association with one of the persons portrayed; c) colour, all predominantly green pictures, for example, being grouped together; d) chaining, based on a story in which typically one of the persons goes through a sequence of events that involves several or all of the other cards.

2. sets of cards grouped together in one or other of the above ways can be considered in terms of the internal organization of the set. This may be paradigmatic (e.g. all the items of food or transport) or syntagmatic (e.g. the items that are involved in a story about 'going shopping') or some hybrid, such as the 'key-ring' principle that links several cards to one other (e.g. all the things the boy likes).
3. the selection of a particular card and the its placement in relation to other cards in a set. Two types of selection are involved: the first cards in a set (or a pair selected together); and all subsequent cards in that set. A note was made in each case as to which of the participants was responsible for the selection of the card. This involved distinguishing, where necessary, between 'open' questions by the adult and those that were 'closed' or 'leading'.

Linguistic analysis is carried out at this third level with the talk occurring in relation to the selection of one card being treated as the largest unit of analysis. In a few cases cards were selected without any discussion, but the typical pattern was for several linked exchanges to occur in relation to the selection of each card, together forming one sequence. The method of linguistic analysis is thus closely related to the framework for discourse analysis proposed by Sinclair and Coulthard (1975), with some use being made of their proposed structure for the exchange in terms of the moves Initiate, Respond and Follow-up. Exchanges are also classified as either relevant to the task or 'off-task', and the former classified as 'task-focussed' or 'task-related'. Three types of task-related exchanges are recognised, those concerned with the explicit justification of the selection those concerned with the verbal identification of the object or some features of the object depicted on the card selected; and those that develop the topic suggested by the picture on the card (e.g. whether the child has a teddy bear; whether he likes jelly, and so on).

3.3 Talk in Relation to Task

As will be clear from this brief summary, this simple task has yielded a wealth of data of different kinds concerning the way in which adults interact with 5 year-old children on a task of this kind. The stage of analysis has not yet concluded but the linguistic analyses that have been completed have already yielded some interesting results. In the following paragraphs we shall report those that bear on three major themes, who is the dominant participant in relation to the selection of the cards;

who is the dominant participant in relation to the initiation of exchanges; what proportion of the exchanges is task-related as opposed to task-focussed. We shall also compare the mothers and teachers and seek for any relationships between the styles adopted by the adults and attributes of the children with whom they interact.

In relation to the selection of individual cards, there is wide variation amongst the adult-child pairs. The total number of choices in any one task-occasion varied between 15 and 55, depending on the enthusiasm of the participants and on whether cards were always selected singly or whether several cards were selected simultaneously to start or add to a set. Within the total number of choices made the proportion made by the child also varied from 0 to 100 per cent. There was a significant tendency for the children to be given a greater responsibility for card-selection when performing the task with their teachers (Wilcoxon matched-pairs signed-ranks test, $T = 25$, $p < .002$ ($N = 20$), although there was an almost equal number of mother-and teacher-assisted occasions on which the selection of cards was fairly evenly divided between the two participants. However, high child selection was much more likely to occur at school and high adult selectio at home.

Another clear difference between home and school was that there were, for all but two children, far more 'task-related' exchanges in the school setting than at home. However this was not the result of the teachers being more likely to engage the children in a second complete sort, but rather because they were more likely to use the task as an opportunity for relevant talk. There was, in fact, a significantly greater proportion of 'task-focussed' exchanges at home and a significantly greater proportion of 'task-related' exchanges at school ($T = 6$, $p < .001$ ($N = 20$)). Even when absolute values are considered, there was still a tendency for more task-focussed exchanges to occur at home than at school.

However, although there was more talk at school, it was not the case that the children initiated more exchanges at school. Indeed, the proportion of adult-initiated exchanges was surprisingly high in both settings: the mean proportion of child initiations at home was 17.8% (S.D. 20.4) and at school 10.5% (S.D. 10.7). Thus there was both a greater proportion of child initiations at home and also a greater variation between adult-child pairs. However, when the proportion of child initiations was compared across settings the difference as not significant ($T = 52.5$, $N = 18$).

When the task-related exchanges were examined in more detail, it was found that the proportion of exchanges concerned with Justification of a particular choice in terms of the criteria used was greater at school than at home ($T = 46.5$, $p < .05$ ($N = 20$)). It seems probable that the explanation of this difference is to be found in an association between the greater proportion of child choices at school and the teachers' concern to ensure that such choices were being made in awareness of the relevant criteria. This hypothesis was tested by calculating the correlation between proportion of child choice and proportion of Justification exchanges for each child in the two settings. The hypothesis was confirmed for the school setting, ($r_s = .48$, $p < .05$) but not for the home setting ($r_s = .18$, n.s.). On the other hand, it has already been noted that the children were more likely to initiate exchanges at home than at school, and so it might be hypothesized that a high proportion of child choice would be associated with a high proportion of child initiation at home but not at school. This hypothesis was also confirmed: the rank correlation between the two variables was significant for the home setting ($r_s = .61$, $p < .01$) but not for the school setting ($r_s = .28$, n.s.).

From these results emerges a picture of two rather different adult styles of assisting the child with the task, with one style being more characteristic of the teachers and the other of the mothers. At school, the teachers tend to see the task as an occasion for fairly systematic teaching. The children are encouraged to select cards to form assodated sets, but within a teacher-controlled framework in which the teacher invites the child to choose each card whilst taking explicit account of the relevant criteria for set membership. A fairly high proportion of exchanges is also devoted to task-related general discussion of the objects depicted. However, this framework does not allow much opportunity for the children to initiate talk exchanges in relation to the task.

At home, on the other hand, the mothers tend to allow the children more opportunities to initiate exchanges in which choices can be made concerning the cards to be selected. However, the mothers are also more likely to take responsibility for the choices made, either by asking closed or leading questions or, in some cases, by direct instruction. Since the mothers are more directive and also, presumably, themselves aware of the criteria for choice, they are less likely to make these criteria explicit in Justification exchanges; they are also less likely to use the task as an occasion for general task-related talk.

It is important to point out, however, that there was much greater variation between the mothers than between the teachers. Some mothers carried out the task in very much the same way as the teachers, whilst others were much more likely to take over the control of the task, seeing it as an oc casion to get the job done properly rather than as an opportunity from which their children could learn more general principles about problem-solving.

Three mothers stood out as markedly different from all the other adults, in that they seemed to make very little effort to see that the task was carried out systematically, and so, although they appeared to be rather like the teachers in allowing their children to make most of the choices, they were quite unlike them in showing rather little concern that the choices were governed by any clear or explicit criteria. One of these mothers also engaged in quite a high proportion of talk not relevant to the task. One possible explanation of their behaviour is that they themselves did not have a very clear understanding of the purpose of the task, in spite of the fact that it was clearly explained to them. Perhaps significantly, all these mothers were from the lowest class of family background and were themselves minimally educated.

The account that has been given so far might suggest that it was the adults, whether mothers or teachers, who determined the way in which the task was performed. Whilst is it certainly the case that the adult was the dominant participant in all but the three task-occasions just described, the children also played a part in determining the way in which the task proceeded. This is brought out rather clearly by two patterns of consistency across the two settings: children who chose a high proportion of cards in one setting were also more likely to choose a high proportion in the other (r_s= .38, $p < .05$); and children who initiated a high proportion of exchanges in one setting were likely to initiate a high proportion in the other (r_s = .52, $p < .01$). Such consistencies seem likely to result from well-established differences between the children, which may be the result of differences in temperament or of differences in attitude learned from previous experience of tasks of a similar kind. What is clear, though, is that the particular form that any particular task-occasion took was the result of an interaction between the style adopted by the adult and the contribution made by the child. This finding is seen as being of particular significance for classroom learning, where there is a danger that, because of the number of children to be taught, the tasks that are allotted and the approach that is taken to them will be standardized, and insufficient attention will be paid to the

differences between children in the way in which they habitually engage in opportunities for systematic learning.

Because there was no 'correct' solution to the task, it is not possible to compare individual adult-child pairs in terms of their success. Nevertheless it is possible to ask whether there is any relationship between any of the variables considered and the children's level of attainment, either at the time the tasks were carried out or after two years of schooling. However, no significant relationships were found, and so it must be concluded that the dimensions on which variation amongst the adult-child pairs has been examined are not associated with the children's attainment in school. The same is true of family background: apart from the three anomalous task-occasions already described, there was no significant relationship between mothers' styles of carrying out the task or the children's contributions to the task at school and class of family background.

This does not mean that there are not more and less helpful ways of engaging in tasks of this sort with five-year-old children, but rather that this investigation was not designed to explore this issue. However, in the light of the arguments that were put forward at the beginning of this section, it might be expected that a style that encouraged children to take responsibility for the choice of card and made the criteria of choice explicit would be beneficial. If that is correct, then the teachers adopted a more facilitating style in this respect. On the other hand, if encouraging the child to take the initiative in talking about the choice to be made and the criteria for making it is beneficial, then the mothers were, to a limited degree, giving more help in this respect. To gain more definitive information on this score, however, it will be necessary to carry out further research.

Section 4 The Antecedents of School Attainment

During the last three years, descriptive data, much of it quantifiable, has been collected with respect to the 32 children in the main sample by means of interviews, tests and teacher assessment schedules. To this can be added information about the early linguistic experience of the children derived from earlier phases of the research. In this section summary descriptive statistics will be presented from each of these instruments in turn, and these will be related to the terminal attainment of the children, as measured by the tests and assessment at 7 years. The section will conclude with an attempt to bring out the main relationships within these data and to determine the relative contribution of the various antecedent measures to terminal attainment.

4.1 Terminal Attainment

As already mentioned in Section 1 , four tests were administered at the end of the child's sixth term at school, when he was approximately 7 years old. These were: the Neale Analysis of Reading Ability, consisting of two sub tests - Accuracy and Comprehension; the English Picture Vocabulary Test; and a test of Number Operations. In order to arrive at an overall measure of attainment, as measured by tests, a rank order was calculated for each test separately, and then each child's mean rank was used in order to derive a final rank order. Similarly, the three main sections of the Teacher Assessment (Social, Language and Number) were combined to give an overall rank order on this instrument.

In investigating the relationships between these measures of terminal attainment and the antecedent variables, two methods were used. Firstly, scores on each of the other variables were ranked and, where appropriate, Spearman rank order correlations were calculated. Secondly, using both rank orders of ter minal attainment, two groups each of 9 children were identified as high and low attainers, and the scores of these groups on the other variables compared, using the Mann-Whitney U test, to determine whether differences between the two groups were statistically significant. Results from these two types of analysis will be referred to as each of the antecedents is considered in turn.

4.2 The home and family background

Four sorts of information were obtained through interview about the children's family background: the number of adults regularly in the home; the number of siblings older or younger than the child being studied; the occupation and education of the parents; and whether the mother had

worked while the child was under 5 years of age.

For many of the children, family structure did not remain constant during their first seven years of life. In three cases the parents separated, the child remaining with the mother; and in two of these cases the mother had remarried by the time the child was seven years old. From our data it is not possible to comment on the effect of these changes on the children in question, nor to make a valid comparison between them and the other children who experienced no such changes. However it can be said that two of the three children were above average on most of the measures of attainment and progress, whilst the third, who was slightly below average, had problems with her sight, which interfered with her progress in school.

A second reason for changing family structure was the birth of siblings. By the time these children reached the age of 7, only 22 of them had remained the only or youngest child in the family. It has often been suggested that a child's position in the birth order affects his experiences in ways which influence his subsequent school attainment. Whilst this is almost certainly true, there is no simple relationship between position in the family and school attainment. Much depends on the age-gap between the siblings concerned and on whether a particular child spends most of his time with an older or younger sibling. Perhaps more important, however,is the amount of undivided attention he receives from his parents, which is influenced as much by the number of pre-school age children in the family as by actual position in the birth order.

In order to test this latter hypothesis, the children were assigned a score for Position in Family as follows:

only child or eldest child with no close siblings: (where close = less than 3 years apart)	4
firstborn with one or more close siblings :	3
subsequent born with no close siblings :	2
subsequent born with one or more close siblings :	1

Calculated in this way, Position in Family was found to be associated with several of the tests given on entry to school: oral comprehension, $r_s = .37$, $p < .05$; story comprehension, $r_s = .42$, $p < .05$; knowledge of literacy, $r_s = .51$, $p < .01$. It was also associated with attainment at 7 as measured by tests. $r_s = .52$, $p < .01$; however the correlation with teacher assessment at 7 ($r_s = .38$) was not significant. The comparison of high and low attainers showed a significant association with Position in Family: $Z = 3.19$, $p = .001$.

When the sample was constructed at the beginning of the research programme, one of the stratifying variables was 'class of family background'. Each child's score was obtained by ascertaining the occupation and level of full-time education of each parent and assigning values as follows: occupation as classified by the Registrar-General, Class 1 = 1 to Class 5 = 5; education, left school at the minimum legal age = 4, stayed on beyond minimal age = 2. Child scores ranged from a minimum of 6 to a maximum of 18 points.

During the six years of the research programme, there were changes on one or more of these parameters for some of the children. The scores were therefore recalculated when the children were aged 7, and it is the latter scores that have been used in this report.

There were significant correlations between Class of Family Background and all test scores on entry to school, ranging from $r_s = .45$ ($p < .05$) to $r_s = .55$ ($p < .001$), and also with overall test performance at 7 ($r_s = .60$, $p < .001$) and with teacher assessment ($r_s = .50$, $p < .01$). The comparison between high and low attainers was also significant ($Z = 3.00$ $p = .003$). The significance of these results will be further discussed at the end of the section.

Whether or not mother goes out to work has also been seen as a factor which may influence a child's early education, presumably in rather the same way as a child's position in the family, that is to say through the restriction mother's work may place on the amount of undivided attention she can give to the child. However, any attempt to assess the effect if any, of mother's employment must distinguish between whether the work is done at home or outside the home and, if the latter, at what time of day and who looks after the child in her absence. In addition it is necessary to know when the mother started to work and for how long she continued to work while the child was under 5 years of age.

On the basis of questions designed to obtain information of this sort, it can be reported that the mothers of 19 of the children did not work at all before their child started school, of the 13 (41%) who did work, several had part-time jobs in the evening when their husbands were at home to look after the children and only 3 (9%) had worked more than 3 half-days a week for more than two out of the child's first 5 years. (These rather low figures for mothers working can probably be accounted for by the fact that when the children were selected at 15 months, any child whose mother was working hours that necessitated the child attending a day nursery was excluded from the sample).

Assigning scores on the basis of number of half-days or evenings worked, and weighting the total time by a factor of two for each year up to the age of 2, the relationship between the score assigned for mothers at work and the later measures of attainment was calculated. The correlation were in all cases close to zero, indicating that there was no simple linear relationship. Similarly there was no significant difference between high and low attainers and amount of time mother had worked.

4.3 Attendance at Nursery School or Playgroup

Rather surprisingly, only 3 (9%) of the children had had no experience of pre-school education by the time they started full-time schooling at the age of 5 years. However, amongst those who had had such experience there was very substantial variation in the age at which they had started and for how many half-days a week they had attended one or other type of provision. It is thus very difficult to assign a score on a single scale for amount of pre-school education. When to that is added the very great variation in the quality of provision between the different institutions, particularly between different playgroups (Hughes et al, 1980), it is clear that the following results must be extremely tentative.

In assigning scores to the children, the two types of provision (nursery school or class, and playgroup) were initially treated separately; the average number of half-days per week were calculated for each year and a weighting assigned as follows: 0-2 years a weighting of 3; 2-3 years a weighting of 2; 3-5 years a weighting of 1. Very few children indeed had attended either form of provision by the age of 2, a small minority attended one or two half-days at a play-group in their third year; a much larger number started after the age of 3, with 9(28%) having some experience of both types of provision during the two years before starting school. Altogether 17 (53%) children had some experience of a nursery school or class and 21 (66%) had some experience of a play-group. As far as class of family background is concerned, there was no significant difference between the two types of provision in terms of the background of the children attending. However as might have been expected in the light of positive discrimination in favour of children judged to be at risk as a result of their social background, the majority of children attending nursery schools or classes for 5 or more half-days a week were from the lowest class of family background ($r_s = .48$, $p < .01$).

When amount of experience of nursery class or of play-group or of both combined was correlated with the measures of terminal attainment no significant relationship was found. However, bearing in mind the qualifications made above and the fact that almost all the children had had some form of pre-school education, these results should not be taken as evidence for or against the effect of pre-school education. In any case, there are other good reasons for a child to attend some form of pre-school educational provision, besides the boost that this might give to his subsequent educational attainment.

4.4 Early Language Development

Since these children were recorded at regular intervals between 15 and 42 months it is possible to investigate the relationship between early progress in oral language development and subsequent attainment at school. A variety of measures of oral language have been derived from the recordings of spontaneous speech(cf.Wells,1978afor a detailed account), and a rank order based on a profile of measures was constructed at ages 2 and 3½ years. In addition, as part of an investigation of the effects of different styles of adult-child interaction on rate of progress in oral language development at about the age of 2 years (Wells, in press b), the adult speech addressed to the children during one observation was coded on a large variety of dimensions and a factor analytic method used to identify clusters of associated variables, some of which were found to be significantly associated with the children's rate of progress at this stage. (Wells, Barnes and Satterly, in preparation).

These measures have subsequently been correlated with the children's scores on the individual tests at 5 and 7 years and also with the rank orders on the teacher assessments and with the rank order on the test profile at 7 years. The results of this analysis are presented in Table 7.

As can be seen, overall test performance at age 7 is already predicted by the rank order of the children's oral language profile as early as age 2 ($r_s = .45$, $p < .01$), and this overall prediction is not significantly increased by taking the rank order on the profile 18 months later at age 3½ years.

However, with respect to performance on the tests administered on entry to school, it is the later of the two profiles that is the better predictor. Although, in general, both profiles tend to be significantly associated with performance on tests concerned with language, at neither age is there a significant association between the profiles and performance

	Age 5						Age 7					
	Oral Comp.	Story Comp.	EPVT	Percep Motor	Knowlit.	Teacher Assess Rank	Neale Accur	Neale Comp.	EPVT.	Number	Overall Test Rank	Teacher Assess Rank
Language Profile @ 2 yrs.	.18	.33	.24	.17	.38*	.33	.41*	.49**	.15	.28	.45**	.34
Language Profile @ 3½ yrs.	.38*	.33	.29	.47**	.46**	.37*	.47**	.47**	.12	.37*	.46**	.29
Progress in 9 months on:-												
Mean Length of Utt.(Structured)	.24	.33	.34	.53**	.48**		.46**	.44**	.16	.36*		
Mean Length of Utt.(Layout)	.34	.35*	.33	.51**	.51**		.49**	.43*	.25	.40*		
Semantic Range	.18	.18	.30	.52**	.40*		.40*	.30	.11	.29		
Semantic Complexity	,26	.32	.24	.44*	.38*		.34	.41*	.13	.31		
Auxiliary Meanings	.28	.19	.37*	.49**	.32		.37*	.40*	.06	.25		
Syntactic Complexity	.20	.32	.20	.49**	.35*		.31	.28	.08	.35*		
Verba/Utterance	.17	.32	.45**	.31	.31		.22	.21	.20	.15		
Auxiliaries/Verb Phrase	.23	.28	.50**	.25	.38*		.33	.34	.41*	.14		
Overall Rate of Progress	.30	.33	.33	.52**	.46**	.42*	.47**	.45**	.21	.34	.41*	.18

* $p < .05$ ** $p < .01$ N = 32 at 5 yrs. N = 31 at 7 yrs.

Table 7. Correlations between early language development and attainment at school

on the English Picture Vocabulary Test. The reason for this has still to be determined.

In the study of the effect of different styles of adult-child interaction, the adult speech variables most strongly associated with the children's differential rate of progress in oral language development at that stage were the extent to which the adult utterances extended the meaning of the child's previous utterance or current activity, or directed his current activity in the interests of his safety or the welfare of either adult or child participant. Child rate of progress was also positively associated with the amount of adult speech addressed to the children. (Wells in press b) It is interesting to note, therefore, that both frequency of extending adult utterances and amount of adult speech are significantly associated with performance on the tests administered at school.

Taken together these results suggest that children who are relatively advanced in oral language development in the early years are more likely by school age to have developed the abilities that underlie successful performance on the tests of attainment, particularly those concerned with literacy. They also suggest that the development of these abilities is associated with the amount and quality of adult speech addressed to them.

By contrast, the relationships between all the measures of early language experience and the assessments of the children's attainment made by the teachers are much weaker, rarely reaching a level of statistical significance.

The most probable explanation for this discrepancy between tests and assessments is that the teacher assessment instruments cover a much wider range of the child's activities than do the tests. That is to say, they are not measuring the same thing. The assessment instrument, for example, contains a series of questions about social behaviour relevant to the classroom, and when these questions are considered on their own, the correlations between this part of the assessment at age 5 and the language profiles at 2 and 3½ years is $r_s = .13$ in both cases. By contrast, the correlations between the language profiles at 2 and 3½ years and those questions in the assessment at 5 years that were concerned with language were $r_s = .53$ ($p < .01$) and $r_s = .51$ ($p < .01$) respectively. Making the same comparisons between the profiles and the relevant parts of the assessment at age 7 years, rather similar results emerge: the correlation with the social behaviour section were $r_s = .22$ and $r_s = .03$ respectively,

and with the language section, r_s =.34 and r_s = .39 ($p < .05$). By 7, the language questions were divided into two parts: those concerned with spoken language and those concerned with written language. Taking them separately, the correlations between the profiles and spoken language at 7 were r_s = .30 and p = .31 but between the profiles and written language they were r_s = .37 ($p < .05$) and r_s = .52 ($p < .01$). It thus seems that, in making their assessments, the teachers were indeed sensitive to differences in language behaviour, and that these were predicted by the earlier profiles to the same extent as were the language tests.

If this explanation is correct, it supports the general conclusions reached on the basis of the tests alone, that is, that attainment in school at age 5 and at age 7, particularly in those areas that concern language, is significantly associated with the rate of oral language development in the early pre-school years. Children who were in advance in their mastery of the systems of oral language at ages 2 and 3½ years were significantly more likely to have higher attainment in spoken language on entry to school and to have higher attainment in both spoken and written language after two years in school.

4.5 The child's experience at home

The parents of each child were interviewed twice, once before the child started school and once at the end of the child's sixth term in school. The questions asked on both occasions were chiefly concerned with how the child spent his time and whether he engaged in any activities connected with literacy; the parent's own interest, in, and uses of, literacy; their preparation of the child for school and help with school work once he had started; and their views about the school and their own relation to it. In reporting the answers given to these questions, an indication will be given of the range of answers and of their relation, if any, to the measures of the children's final attainment.

4.6 The child's activities

In the first interview, a question was asked about the range of the child's activities in the previous two days and the previous Sunday. 19 possible activities were suggested and a space was left for any activities other than those listed. In scoring the responses, attendance at playgroup or nursery school was omitted. Almost half the children

were said to have engaged in 8 or 9 activities; the greatest number was 14 and the smallest 4. There was a significant association between range of activities and terminal attainment; the correlation with test attainment was $r_s = .43$ ($p < .05$) and with teacher assessment $r_s = .48$ ($p < .01$). When high and low attainers were compared, there was a significant difference with high attainers being more likely to have engaged in a wider range of activities ($Z = 2.21$: $p = .03$). There was also a significant correlation between range of activities and class of family background ($r_s = .62$, $p < .001$).

In a subsequent question about the child's preferred activities, three activities are worth commenting on. In each case the parent was asked to indicate on a five-point scale how often the child engaged in the activity in question. Watching TV was an activity that all children except one engaged in, with 23 children being said to watch at least once each day. Not surprisingly, with the majority of children having the same high score, there was no association with terminal attainment.

A second group of activities concerned engagement in adult activities. In an investigation of the differences between faster and slower developers at about the age of 2 years (Ellis and Wells, 1980), talk in the context of household activities has been found to be associated with faster development. Scores here ranged from 6 to 15 with a mode of 11. There was no association with terminal attainment.

The third group of activities was concerned with literacy, and will be reported under that heading.

In the same section a question was asked about the amount of time the mother spent on an average day engaged in activities with the child. Answers ranged from 'less than 1 hour' (1 mother) to 'more than 5 hours' (10 mothers). This too was not associated with terminal attainment.

4.7 The child's use of language

A number of questions were asked about the child's speech how talkative he was; the range of functions for which he used language; and the parent's assessment of his ability compared with other children. Only the question concerning the range of functions for which language was used discriminated amongst the children: 17 functions were suggested and answers ranged from 6 to 17 with a mode of 8. Scores on this

question were associated with terminal tests (r_s = .45, $p < .05$) but not with teacher assessment (r_s = .14); they were also associated with class of family background (r_s =.55, $p < .01$).

4.8 Interest in literacy at home

As mentioned above, one group of activities included in the question about the child's preferences was concerned with literacy: listening to a story, looking at books or comics, writing or pretending to write. The answers suggested considerable variation amongst the children: scores ranged from 3 to 17 with a mode of 12. Scores were significantly correlated with both measures of terminal attainment: with tests (r_s = .36, $p < .05$) with teacher assessment (r_s = .51 $p < .01$). The difference between high and low achievers on this variable failed to reach a level of statistical significance, but there was a significant correlation with class of family background (r_s = .65, $p < .001$). Probing more deeply, a further question asked about the degree of the child's concentration when engaged in such activities. Scores ranged from 0 to 15 with a median of 10. The association with terminal attainment was even stronger than in the case of interest in literacy (r_s = .59, $p < .001$ for tests; r_s = .45, $p < .05$ for teacher assessment) and on this question there was a significant difference between high and low attainers (Z = 2.63, p =.009). Here again there was a significant correlation with class of family background (r_s = .62, $p < .001$).

In the second interview two further questions were asked about the child's interest in literacy: how many books did the child possess and could he read or write before starting school. On the first question, 27 children were said to possess more than 20 books of their own and only 2 to possess less than 4. There was, nevertheless, a significant association between number of books possessed by the child and terminal attainment (r_s = .50, $p < .01$, for tests and r_s = .49, $p < .01$ for teacher assessment) and also with class of family background (r_s = .53, $p < .01$). High attainers were more likely than low attainers to possess more books (Z = 2.18, p = .03). In the case of all these results, however, it must be remembered that only 4 of the children received less than the maximum score.

With respect to reading and writing before starting school, a distinction was made between reading and writing one or two words only and reading and writing with some degree of fluency. 6 children were claimed to

have some fluency in both reading and writing whilst only 7 were said not to have learned either skill at all. More than two thirds of the children were said to have mastered at least one or two words. Somewhat surprisingly, degree of mastery of reading and writing before entry to school was not particularly strongly associated with terminal attainment (r_s = .38, $p < .05$ for tests; r_s = .25, n.s. for teachers' assessment.) However high attainers were significantly more likely than low attainers to have achieved some degree of mastery for these skills before starting school (Z = 2.44, p = .01). The correlation with class of family background (r_s = .25) was not significant.

Questions were also asked about the parents' own interest in literacy. At the first interview the mother was asked how often she engaged in reading and writing activities with the child. Answers ranged from not at all (3 mothers) to very often (2 mothers). Amount of shared interest in these activities was associated with both test (r_s = .43, $p < .05$) and teacher assessment (r_s = .40, $p < .05$) measures of attainment, but did not discriminate between high and low attainers (Z = 1.56 n.s.). The correlation with class of family background was r_s = .65 ($p < .001$). At the second interview, the parents were asked about their own reading: how often they read newspapers, magazines and books and how many books they possessed. This gave a composite score ranging from 4 to 18, median 14. However, scores on this measure were not significantly associated with terminal attainment or with class of family background. A further question was asked about the parents' evaluation of the importance of reading and writing for a variety of purposes. However, this question failed to discriminate amongst them; almost all thought literacy was very important for all purposes except keeping in touch with friends, for which the telephone was seen as a satisfactory alternative.

In general, therefore, interest in literacy in the home in the pre-school years was found to be a significant predictor of attainment after two years in school, with measures of the child's interest being more strongly associated with terminal attainment than measures of the parents' interest. This reverses the order found in the earlier study of a similar sample of 20 children (Moon and Wells, 1979), where parental interest in literacy was found to be a strong predictor of attainment

in reading ($r = .68$, $p < .01$ on the Neale Analysis, $r = .57$, $p < .01$ on the teacher assessment). Since the questions used here were not the same as in the earlier investigation and, as already reported, not all of them discriminated amongst the respondents, it is probable that the lower correlations in the present study can be attributed to the less satisfactory nature of the questions asked.

4.9 Preparation for School

A whole section of the first interview was devoted to the parents' preparation of the child for school and to their own knowledge about and attitudes to, the school. Since none of the distributions of answers to these questions was significantly associated with terminal attainment, they will only be touched on briefly. All but 5 of the mothers had talked with their children 'quite often' or 'very often' about going to school and all but 3 were confident that their children would settle easily, at least after a while. Similarly, all but 4 believed that their children were quite or very much looking forward to going to school. On the whole, the mothers felt they were reasonably well informed about the school, but this was less true where the child was the first in the family to attend the school in question, suggesting that schools could usefully do more to inform parents about the procedures and curriculum that the children will be expected to follow when they start school.

One set of questions was particularly interesting. It consisted of pairs of randomly ordered converse statements with which the mothers were asked to agree or disagree, using a five point scale, (e.g. 'Teachers should smack children when they are naughty' v. 'Teachers should never smack children'). The questions were organized around two main themes: formal, authoritarian v. informal, non-authoritarian teaching; and parents sharing responsibility for their children's education with the teachers v. leaving the responsibility to the teachers. By balancing the extent of agreement to each statement in a pair and combining the scores for all pairs for each theme, two overall indices were calculated. Mothers were more-or-less normally distributed on the formal-informal index, whereas there was a clear tendency for them to believe that they should share responsibility for their children's education with the teachers. However in neither case were responses associated with the children's terminal attainment.

In the second interview, conducted after the child had been at school for two years, the parents were asked how easily the child had settled when he started school and how well satisfied they were with the child's progress two years later. Only 4 of the children had had any difficulty in settling into school and in only 3 cases were the parents not at least 'quite satisfied' with their children's progress. In fact, 20 of the children had 'very satisfied' parents. In no case were those considered to be making less than satisfactory progress amongst those who had difficulty in settling; on the contrary, all those who had difficulty in settling had parents who were very satisfied with their progress. Neither of these variables was associated with terminal attainment.

The parents were also asked about the conditions under which they had visited the school; taking and fetching the child; open days; PTA meetings or social functions; specific visit to Head or Class Teacher. The parents of 20 children had visited under at least three of these headings and those of only 2 had visited under no more than one condition. This was not associated with terminal attainment: On the other hand, parental knowledge about what the child was doing at school was associated with attainment. Three possibilities were considered: talking to the child about school activities; visits to the school; other means. A weighting of 2 was given to talking to the child, and a total score calculated for each child. Parents of 23 children mentioned all three means of discovering about the child's activities at school; those of 1 child had no knowledge at all. The larger the number of means mentioned, the higher the child's attainment was likely to be (r_s = .38, $p < .05$ for tests; r_s = .35, $p < .05$ for teacher assessment).

Finally, a group of questions was asked about any help that the parents had given during the two years of schooling and, if help with literacy was mentioned in the response, further questions were asked about the sort of help that had been given. Six types of help were coded: showing interest in child's activities at school; talk about issues that arose; listening to the child read; helping him to write; deliberate teaching of reading and writing; and help with number work. Actual responses included other types of help, such as visits to the library, museum or places of interest, purchase of educational apparatus, etc., but these were not coded for inclusion in the scored total number of ways in which help was given. Scores were distributed as follows:

	Number of types of help						
Number of	0	1	2	3	4	5	6
children	6	5	9	8	0	3	0

Given that only 5 children's parents were of the opinion that the child's education should be left to the teachers, the number of parents who reported that they gave little or no help was surprisingly large. Number of types of help given was significantly associated with terminal attainment on the tests ($r_s = .46$, $p < .01$) but not with the teacher assessment. There is however some difficulty in interpreting this result. Several of the children with the highest attainment had, in their parents' opinion, made such rapid progress that there had been little need for them to give the sort of help that was specified in the categories coded; for example, they didn't need anybody to listen to them read or help with writing or number work, because they were already competent. Since the sorts of help that such parents tended to give were amongst those not specifically coded, the scores for these children almost certainly underestimate the parental contribution, and thus reduce the size of the correlation between amount of parental help given and the child's terminal attainment. For the same reason, the answers on the specific types of help given with literacy, although interesting, were not associated with the children's terminal attainment.

The second interview also contained questions about the personalities of the child and his parents and about the parents' social relations outside the home. Since these questions were not directly related to the transition from home to school, the responses have not yet been analysed.

4.10 The Tests

The tests administered at age 5 years, on entry to school were intended to provide an objective estimate, obtained under controlled conditions of certain aspects of the children's readiness for the more formal type of education that they would meet at school. Tests, in themselves, are a rather formal activity, very different from most children's experience, up to that point, of interaction with an adult. For the 32 children in the project sample this was less true than for the children in the 'control' sample, as they had been tested at three-monthly intervals throughout their early childhood. It is not surprising, therefore, that there was a tendency, significant in the case of several of the tests, for the project

sample to achieve higher mean scores than the control group. It must also be borne in mind that the project sample deliberately excluded children of non-English speaking children and children with known handicaps. The control group, on the other hand, was not selected in this way and their mean scores may have been depressed for that reason. Nevertheless, the difference between the two groups was not so great as to suggest that the project sample was markedly different from the larger population of pre-school children from when they were originally selected.

The tests have already been described in Section 1 of the report (pp. 8-10); in this section, the emphasis will be on their power to predict attainment at age 7. Each test will be considered in relation to each of the tests administered at 7 years and then to the rank order on the complete battery of tests at 7 and to the teacher assessment. A summary of the results is given in Table 8.

Tests at 5 years	Attainment at 7 years					
	Neale Accuracy	Neale Compr.	EPVT	Number	Overall Test Rank	Teach. Asst. Rank
Oral Comprehension	.54**	.51**	.49**	.54**	.55***	.46**
Story Comprehension	.52**	.57***	.31	.50**	.50**	.52**
E.P.V.T.	.56***	.59***	.61***	.38*	.52**	.35*
Perceptuo-motor	.52**	.48**	.48**	.67***	.59***	.23
Knowledge of Literacy	.82***	.75***	.46**	.56***	.78***	.58***
Overall Rank					.77***	.50**

* $p < .05$ ** $p < .01$ *** $p < .001$ N = 31

Table 8. Correlations between Tests at 5 and Attainment at 7 years.

Both the Oral Comprehension and the Story Comprehension tests prove to be reasonable satisfactory predictors of the tests of reading and number at 7 years. They are also about equally successful in predicting overall rank order on tests and teacher assessment. Both discriminate between high and low attainers: on the oral comprehensions test, $Z = 2.46$, $p = .01$, on the story comprehension, $Z = 2.80$, $p = .005$, The English Picture Vocabulary Test is about equally successful in predicting later attainment on tests;

however it is less effective in predicting later teacher assessment. This may be because the emphasis on vocabulary which characterises the EPVT does not play a large part in the teacher assessment. Nevertheless the EPVT discriminates between high and low attainers ($Z = 2.13$, $p = .03$). The test of perceptual and motor development proves to be a particularly good predictor of attainment in number at 7. On the other hand, it is not significantly correlated with the teacher assessment at that age. It also fails to discriminate between high and low attainers.

Of all the tests, however, it is that which is concerned with knowledge of literacy which is the best single predictor of later attainment. Correlations with the two parts of the Neale Analysis of Reading are particularly high, and it is also the best predictor of the teacher assessment of attainment. The difference between high and low attainers at 7 years is also most strongly marked on this test ($Z = 3.49$, $p = .0005$). These results replicate those of 'Children Learning to Read' project, where this test was again the best single predictor of attainment in reading at 7 years.

Taking the sum of the ranks on the individual tests as the basis for an overall rank order of readiness for school, it can be seen that the correlation between readiness for school as measured by these tests, and subsequent attainment is high, and particularly when attainment is assessed by means of tests. The lower correlation with the rank order derived from the teacher assessment is not surprising since, as was anticipated when choosing to use these two different measures of attainment, whereas the tests measure performance in a formal situation on one particular occasion, the teachers' assessments are based on their cumulative experience of relatively spontaneous informal behaviour. It is to be expected, therefore, that test performance at one age will tend to predict test performance at a later age, since in addition to measuring the specific content it is designed to measure, each test to some extent also measures the ability to perform well under test conditions.

4.11 The Teacher Assessments

A second reason for obtaining an assessment of the children's attainment by means of an instrument completed by their teachers was that teachers are often somewhat distrustful of the information that can be obtained from tests. They rightly point out that tests, by their very nature, concentrate on relatively limited areas of a child's ability and thus may present a less than rounded picture of what a child is capable

of doing across a full range of curricular activities. In designing the teacher assessment instruments, therefore, an effort was made to take as broad a view as possible of the child's educational attainment and items were included on social behaviour as well as on the narrower domain of 'basic skills'.

The construction of the first instrument was carried out in three stages. First a group of Infant School teachers was invited to suggest the specific areas of behaviour that should be included and the sort of descriptions that should define the extremes of more and less mature behaviour. Then the research team produced a draft version, which was circulated to the same group of teachers for comments and suggested revisions. The final instrument was then produced, taking account of the comments received. The second assessment instrument was constructed in a similar way, except that, as it was modelled on the first, the preliminary stage of consultation was omitted.

In both instruments, in addition to the detailed assessment of attainment, items were included that asked the teacher to make a general assessment of the child's linguistic and cognitive ability and to predict his probable level of attainment by the end of the Primary stage of schooling. These items called for a rating on a 5 point scale, centering on 'Average'. This proved less than satisfactory for two reasons: firstly, the teachers' estimate of what was an average level of attainment varied quite considerably, depending on the range of their previous experience; secondly, some teachers refused to complete the items concerning probable future level of attainment, on the grounds that it was unprofessional to make such predictions.

The detailed consideration of the responses to the two instruments is still in progress, but scores for the various sub-sections as well as overall totals have been calculated for the present analysis, so that it is possible to investigate the predictive power of the various sub-sections in the first instrument for the overall assessment of attainment at age 7 years, both by means of tests and teacher assessment. The overall rank order can also be compared with the rank order on the tests administered concurrently at 5 years. The results are presented in Table 9.

Teacher Assessment at 5 yrs.	Teacher Assessment at 7 yrs.	Overall Test rank at 7 yrs	High & Low Attainers	Overall Test rank at 5 yrs.
Social Adjustment	.22	.19	n.s.	
Oral Language	.50**	.67***	Z=2.61 p = .01	
General Ability	.40*	.59***	Z=2.39 p = .02	
Summary of Lang.	.31	.54**	n.s.	
Summary of Cogn.	.50**	.44*	n.s.	
Total Score	.50**	.61***	Z= 2.16 p = .03	.64***

* p .05 ** p .01 *** p .001 N = 31

Table 9. Correlations between sub-sections of the Teacher Assessment at 5 years and selected variables.

Several interesting facts emerge from this summary table. Firstly, the social adjustment of the children, as assessed by the teachers, does not predict their later attainment. This is rather surprising as teachers generally consider this aspect of a child's readiness for school to be of particular importance.

Secondly, in both cases where there is a summary assessment in parallel with a more detailed section of the instrument, it is the total score from the detailed questions that has the higher correlation with later attainment. This argues for the use of detailed inventories or checklists rather than overall judgments when keeping records or making assessments of children's attainment or progress in school. This is borne out by the comparison of the high and low attainers at age 7: only the total scores from the detailed sub-sections discriminate between the two groups.

Thirdly, the teacher assessment at 5 years is more successful at predicting later attainment as measured by tests than it is in predicting the rank order on the later teacher assessment. By comparison the overall rank orders of the tests at the two ages are much more highly correlated (r_s = .77). When to this are added the rather low concurrent correlations between tests and teacher assessments (r_s= .64 at both ages), it seems reasonable to conclude that the tests provide rather more reliable instruments of assessment and prediction than the teachers' assessments.

4.12 Conclusion

The strongest pattern to emerge from these results is a progressive differentiation amongst the children in measured attainment, with the predictions from one point to the next becoming increasingly powerful. This suggests a variation amongst the children in ability to learn that is manifested relatively early in their learning of language and which is cumulative in its effect on measured attainment into the period of formal schooling. These results also provide confirmation for the importance that has been attributed to language in the degree of success that children achieve in the early years at school.

However, when the tests administered on entry to school are looked at separately, by far the most significant as a predictor of attainment at age 7 is the test of knowledge of literacy. It is necessary, therefore, to qualify the earlier finding concerning the importance of language for progress in school, and to state more precisely that it is knowledge and ability with respect to the written language that is of particular importance.

Two reasons can be suggested for this. Firstly, a major part of the curriculum in the first stage of schooling is concerned with the acquisition of literacy, and indeed two of the four tests of attainment that we administered at age 7 were tests of reading. Secondly, the skills involved in learning to read and write are characteristic of much of the learning that takes place at school in their relative abstractness and emphasis on the symbolic property of linguistic representations. A comparison of the spoken language occurring in the homes and classrooms of these children reveals little difference in either the structures or the functions used in the two settings; however there are quite important differences in the typical relationship between the language used and the organization of experience to which it refers (Wells, in press a). Talk at home typically arises out of immediate practical activity and is supported by the context in which it occurs; at school, on the other hand, direct contextual support for much of what is talked about is lacking and indeed, as Donaldson (1978) has argued, it is one of the chief aims of schooling to help the child to 'disembed' his thinking from the supportive context of actual experience and to bring it under the control of meanings that are encoded in the linguistic message alone. Clearly, learning to use the written language is one very important way of developing this ability. Nor surprisingly, therefore, those children who already hav e some understanding of the purpose and organization of written language on entry to school are likely to have achieved a higher level of attainment two years later.

This early acquaintance with written language is not usually acquired by the child's efforts alone. Previous studies of precocious readers (e.g. Durkin, 1966; Clark,1976) have found that such children tend to show an early interest in the printed language in their environment and to be encouraged in that interest by their parents. Although there were no precocious readers in our sample, many of the children could read a few words and write their own names by the time they started school and these skills seem to have been fairly deliberately taught by their parents. However, much more important as a preparation for schooling is a general interest in books, magazines and catalogues and the personal possession of books by the child. But the strongest association of all those investigated was with the extent to which the child showed a tendency to spend extended periods of time on activities associated with literacy. Such interests and habits in the children clearly owe much to the example provided by their parents and to the extent to which the parents have shared their own interests with their children. This is borne out by the strength of the association between the separate measures of parents' and children's interest in literacy ($r = .74$). Thus it seems to be largely as a result of repeated interactions with their parents, centred on looking at books and other printed material, listening to stories and attempting to draw and write, that some children acquire the skills associated with written language that give them such an advantage in making the transition from home to school. It should be added however, that the quality of more general conversation is also of importance. In an earlier study of a similar sample of children (Wells and Raban, 1978) a measure of the quality of adult speech in the later pre-school years was strongly associated with attainment at the age of 7 years ($r = .66$, p .01, $N = 20$) even though in that study it was only attainment in reading that was investigated.

It is in this context that we can best understand the association found between the children's attainment at school and their class of family background. No such significant association was found in the early stages of language development, either with the children's language profiles or with the quality of adult speech addressed to them. Nor was there a significant relationship between class of family background and the amount of help that parents reported that they gave with school work, once the children had started

school. However on both occasions when the children were formally assessed in school, their performance on the various tests was significantly correlated with their class of family background.* At both ages the highest correlation with individual tests occurred in relation to tests involving literacy. The reason for these associations becomes clearer when we examine the relationships between class of family background and the measures of interest in literacy in the home. For both parents and children the correlation was $r_s = .65$. It appears therefore that the important class-associated difference between homes is to be found in the value that is placed on literacy and on the relatively context-independent exchange of meanings that is facilitated by the symbolic power of language, particularly in its written form. And this, not surprisingly, is associated with the extent of the parents' own education and with the role that reading and writing play in their everyday activities (Wells, in press a). Where children are involved early and frequently in such uses of language, they not only develop interests and skills that will be relevant to the acquisition of literacy in school, but they also begin to develop a facility with 'disembedded' uses of language that are characteristic of much classroom talk and also of test situations, such as those in which attainment is formally assessed.

There remains one important influence on school attainment that we have not yet fully investigated, and that is the interaction between teacher and pupil which provides the context for much of the learning that takes place at school. Just as qualitative differences in the speech addressed to the children in the early stages of language learning were associated with the children's rate of progress, so it might be expected that similar differences between teachers in their teaching styles would be associated with the children's progress in school. In the earlier study already referred to (Wells and Raban, 1978), a trend was found for children who made greater or less progress in learning to read than would have been predicted on the basis of their knowledge of literacy on entry to school to have been taught by teachers who were subjectively judged to be more or less successful than average in their style of teaching. More objective measures of teaching style will eventually be available in the present study from the recordings made of naturally occurring interaction in the classroom, but the analysis of this material still has to be completed.

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* It should be pointed out, however, that the actual size of the correlations was probably inflated by the way in which the sample was selected. In order to maximise the opportunity for comparison to be made of the characteristics of high and low attainers, the sample was biased in favour of children with relatively extreme scores on the language profile of 3½ years, and these children had already been found to be more likely to come from the two extremes on the scale of family background (Wells, 1978b).

Equally important are the more global adjustments that teachers make to the perceived abilities of their pupils. It has been claimed by some investigators that teachers tend to have stereotypical expectations about their pupils, based on limited knowledge of their home background, or on such superficial characteristics of their speech as accent and dialect, and that, as a result, they modify the curriculum and their teaching style in ways which render these expectations more likely to be fulfilled. Whilst this may be partly true, a much more important influence on teacher behaviour is the actually observed differences between children in their ability to cope with test-like situations and in their knowledge about literacy on entry to school. Given that these differences are, in fact, strongly predictive of later attainment within the context of the sort of curriculum that is typical of most Infant schools, it is not surprising that differences in oral language ability, as such, do not seem to play as large a part in accounting for attainment at age 7 as might be expected in the light of the arguments that have been put forward for the role of language in educational success.

In summary, therefore, it seems that whilst academic attainment is to some extent dependent on oral language ability, and that this, in turn, is associated with the quality of linguistic interaction experienced during the pre-school years, an adult style of conversation that facilitates the development of oral language is not in itself sufficient to equip a child to benefit from the opportunities for learning provided by the more formal context of the classroom. Familiarity with more abstract and less context-dependent uses of language, such as those associated with reading and writing, seems to be particularly important here, and this tends to be associated with the place and value of literacy in the everyday lives of the parents, which, in turn, is associated with their own educational and occupational status. Where this familiarity is absent, children are at a disadvantage, both because they lack skills which are important for learning in school and also because this lack of skills affects the ways in which their teachers interact with them.

Section 5. The Practicalities of the Project

Almost all research projects meet unexpected difficulties, but in this particular case practical difficulties inherent in the research methodology have been compounded by difficulties resulting from the effects of the financial situation on the country as a whole.

Because it is part of a longitudinal study of a particular group of children, the project had to begin in Autumn 1976, and this happened to be a time when the first wave of cuts in public spending was affecting the availability of research funds from the major grant-giving bodies. As a result, the research had to be begun with grants totalling no more than £625 from the Boots Charitable Trust and from local business, and £400 from the School of Education budget for small-scale research; there was no guarantee of further financial support when these sums had been spent. The project was extremely fortunate, therefore, to have the unpaid assistance of Ms. Janet Adams who, because of a sudden change in the LEA staffing policy, found herself unemployed and unable to apply for a teaching post in Avon, where she had previously been employed. Her experience as an Infant School Teacher was invaluable in designing and piloting the assessment instruments and the tests to be used on entry to school. She also made all the final home recordings and acted as the second member of the team with the research director for the first round of classroom observations. Without her help, the project could not have been contemplated, let alone successfully launched; we are thus extremely indebted to her for her generous and valuable contribution to the research.

In December 1976 a grant was received from the SSRC to study the development of parent-child conversation. In addition, a small sum was included to purchase the materials necessary to make the planned observations; it was also agreed that a small proportion of the research workers' time could be spent in assisting with the classroom observations. However, this was of little immediate benefit as, for various reasons, the two research staff, Martin Montgomery and Peter French, were unable to take up their appointments until 1 September 1977. However by January 1977 the grant for which this is the final report had been received from the Nuffield Foundation and Ms Margaret MacLure was appointed with effect from 7 February 1977.

When work began on the analysis of the parent-child conversations of the 32 project children in September 1977, it soon became apparent that the different skills of the research staff on the two related projects would be best utilised by a reallocation of responsibilities. Accordingly, with the approval of the two funding bodies, Peter French took over

responsibility for the school observations and the second round of tests and assessments, while Margaret MacLure concentrated on the development of a model of discourse analysis, based on the pre-school conversational data. However, all members of the group participated regularly in the making of the classroom observations, as did John Homewood, a research student attached to the research programme.

By the summer of 1977 it seemed that the problems of securing the necessary resources to carry out the planned research had been solved. But then in September 1977, in response to cuts in the education budget, the headteachers of Infant Schools decided to discontinue the practice of admitting 'rising fives'. This meant that six children, whose birthdays fell between 6 and 30 September, were not admitted in September, as had been anticipated. This had important implications for the overall schedule of the research, as it meant that the final observations of these children, together with the administration of tests, assessments and parental interviews, would be delayed by one term and would not be completed long enough before the end of the grant period to allow the material collected to be analysed by the staff employed out of the grant. Some alleviation of this difficulty was secured by the agreement of the SSRC to extend Mr. French's appointment by four months until the end of December 1979 so that he could, with the help of Ms MacLure, complete the data collection. However, this did not overcome the problem of the lack of time for analysis of the data collected.

Further effects of the cuts in educational spending were felt in the later stages of the period of data collection in the form of a marked decrease in the willingness of the head and class teachers to complete the final assessments of the children and, where there had been a change of teacher, the teacher questionnaires. In more than one case, it was argued that as the schools were having their resources reduced, they could not be expected to carry out any unnecessary tasks, such as helping with research. As a result, one or two of the assessments of the control group children were not completed. However all of the main sample assessments were finally carried out.

A further cause of strain for the research staff during the last year has been the reduction in opportunities for further employment after the end of the project. This has not been peculiar to this particular research project, of course, and uncertainty about the future has always been an occupational hazard for the contract research worker, which has acted as a spur to produce substantive evidence of competence in the form of reports

and publications. In a time of recession such as the present, however, the need to try to secure the future can be so great as to interfere with the routine work required by the research project itself. In particular, the preparation of proposals for further research has occupied more time than it should, with the result that analysis of the data collected has not been completed in the period covered by the grant. As Director of the research I must accept responsibility for having allowed this diversion of effort; but I have a great deal of sympathy for the plight of Margaret MacLure and Peter French, both very competent research workers, who, in spite of their strenuous efforts, have been unemployed since the grant expired.

In spite of these various difficulties, however, a great deal has been achieved, as will be clear from the preceding sections. Work is still continuing on the statistical analysis of the longitudinal data and, if further support can be secured, we intend to complete the comparative analysis of the last home and first school recordings.

The results discussed in this report have been largely the outcome of quantitative analysis. However, a major thrust of the research has been in the area of qualitative analysis of teacher-pupil interaction, in an attempt to describe the relationship between conversational structure and the teaching and learning strategies of teachers and pupils. This line of enquiry, which goes beyond what was put forward in the original proposal, has considerably enriched the quantitative analysis reported in Section 2 of this report as well as making a substantial contribution to theory in its own right through the publication of a substantial number of papers (see Appendix 2).

A major impetus to this more theoretical work came from a seminar held in Bristol in September, 1978, on the topic of adult-child interaction at home and at school. This seminar, which was organised by French and MacLure with a small grant from the SSRC, brought together researchers from a variety of different disciplines to consider the different approaches that have been taken to the description of discourse and to evaluate their appropriateness for different types of research. The papers from the seminar have been revised and brought together for publications by French and MacLure, who have edited the volume and written responses to two of the papers in the collection.

The seminar also made a more direct contribution to the work of the Bristol research programme: as a result of the discussion that took place,

we have tended to give more emphasis, in our description of classroom interaction to the strategic nature of contributions to classroom talk, particularly those of the teacher. This is apparent in the various papers by French and MacLure and in their contribution to the first volume in the series about the research programme.

With the continuation of the longitudinal research programme into the first stage of schooling, interest in the work has continued to grow, particularly amongst those concerned with the education of young children. The findings of the research and the implications we see them to have for the early stages of education have been disseminated nationally through contributions to conferences and lectures at Teachers' Centres and University Departments of Education as well as through the publications. The Director of the programme has also made a number of television programmes about the research in collaboration with the ILEA Centre for Language in Primary Education, which are now nationally available on video cassette. In these ways, the research is making what we believe to be a significant contribution to debate about the theory and practice of early education.

In concluding this report we should like to express our thanks to the children and their parents and teachers, whose cooperation has made the research possible. We should also like to thank the many people, students, colleagues and temporary staff, who have contributed to the work of transcription, analysis and interpretation of the material that we have collected. Finally we wish to express our gratitude to the Nuffield Foundation and the Social Science Research Council for their parallel funding which enabled us to carry out the research.

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Appendix J. Method of Classroom Observation

The method and configuration of equipment dscribed in the following paragraphs was the result of quite extensive field trials and, apart from occasional technical problems, proved extremely satisfactory in terms of the quality of the audio and video recordings obtained.

The aim in each observation has been to obtain as clear a record as possible of all speech produced by, and addressed to, the child under observation, together with information about the situational context in which it occurs. The interaction should be, as far as possible, entirely natural and no attempt is made to control the position of the subjects being observed or to influence the activities in which they engage. In order to minimize the effect of the presence of the equipment and its operators on the children, the equipment is demonstrated to the whole class at the beginning of each observation, during which each child is given an opportunity to see him/herself on the monitor and to perform to the camera. This has proved extremely successful, as in almost every case the children have ignored the research workers and their equipment for the rest of the observation.

The configuration of recording equipment consists of audio and video components. A radio-microphone, worn by the child under observation, transmits to a radio receiver on a trolley, which also holds two stereo audio recorders, which are used alternately to allow continuous recording over the 3 hour period from 9 a.m. to 12 noon. The signal from the radio receiver is passed through an equalizer which allows modification of critical frequencies to produce optimum clarity in the recording. The output of the equalizer is fed to : a) one channel of the stereo audio recorder, and b) the audio input to the video tape recorder. A camera mounted on an extension of one leg of the trolley provides the video input to the V.T.R, and the video signal is monitored on a small TV receiver. Because of the expense of video tape, only samples of the child's behaviour are recorded on video, the timing and content of the samples being selected according to the aims of the subsequent analyses envisaged. In order to provide further contextual information for the audio recording, the camera operator monitors the signal from the radio microphone, and speaks (sotto voce) a commentary, which is recorded on the second track of the stereo audio-recorder in parallel with the signal from the radio microphone. A second

researcher, positioned where he can see the child's face, makes a written, time-based, record of the child's activities, including an indication of whom the child is interacting with. Both the camera operator and the observer are equipped with press buttons which activate high-pitched buzzers connected to the audio equipment. (The observer's buzzer signal is transmitted by radio signal.) The buzzers are activated whenever the child under observation speaks, and the signals (on different frequencies) are mixed with the spoken commentary and recorded on the second track of the audio recorder. On replay, the two tracks are listened to separately and then played together in order to synchronize the separate sources of information.

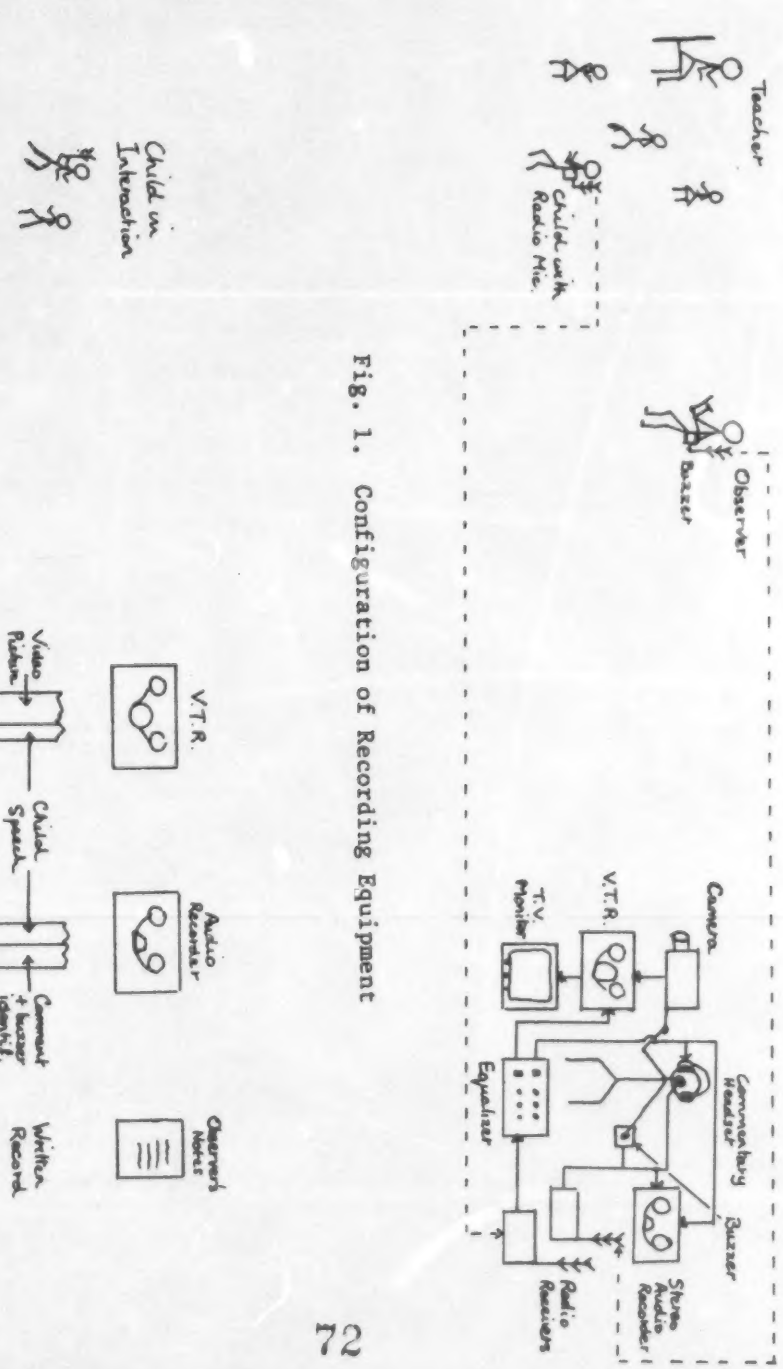

Fig. 1. Configuration of Recording Equipment

Fig. 1. Types of Record Obtained

Appendix

Publications Arising from the Project

FRENCH, P. (1980) Getting round the rules: on children's strategies for circumnavigating conversational restrictions. Paper presented at the Association of Child Psychology and Psychiatry annual conference, Tavistock Clinic, London, June 1979.

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